A DESIGN GUIDE FOR CONTEMPORARY SAUDI ARABIAN HOMES IN RIYADH

M I ALMEHREJ

PhD

2015

A DESIGN GUIDE FOR CONTEMPORARY SAUDI ARABIAN HOMES IN RIYADH

MAJID IBRAHIM ALMEHREJ

A thesis submitted in partial fulfilment of the requirements
of the University of Northumbria at Newcastle
for the degree of Doctor of Philosophy

Research undertaken in Department of
Architecture and the Built Environment

January 2015

In the name of Allah, the most compassionate, the most merciful

Abstract

The traditional form of the Arab house was dictated by both its climate and the culture of its inhabitants. Islamic values, as well as socio-economic factors, have played critical roles in ordering and forming the built environment. However, the mid-1950s marked the beginning of Saudi Arabia's first rapid economic growth as a result of the discovery of oil, which dramatically increased the wealth and prosperity of the population, resulting in a new lifestyle. This period witnessed the introduction of the grid layout street pattern and the detached villa house type constructed in reinforced concrete, with large windows and balconies. This is still the prevalent style in Saudi Arabia and the central province in particular. While the traditional courtyard house created its own privacy and microclimate, this contemporary type is a solid building with a narrow open space between it and the next house. The initial investigation for this research revealed that the villa style creates fundamental problems for Saudi families, especially in terms of lack of privacy; and the air-conditioning has negative implications for the climate.

The theoretical framework investigates the principles of cultures that are associated with the home, in order to clarify its concept and fundamental principles; illustrate the influence of culture on house form; and finally, demonstrate the nature of both the courtyard and villa house types. The methodology uses a survey strategy with questionnaires, interviews and building analysis. This study aims to highlight the need for a specific contemporary home style where both the treatment of place and the house design meet all the needs of Saudi households. The output of this research will be some guidance for house design that could satisfy 21st century aspirations, yet still respect Islamic culture and traditional values.

Table of Contents

List of Tables

List of Figures

All illustrations are by the author except where stated.

Chapter 1

Chapter 2

Chapter 3

Chapter 4

Chapter 5

Chapter 6

List of accompanying materials

Appendix A:	Questionnaires Form
Appendix B:	Interview Schedule, Courtyard house – Satisfaction with alterations Interview Schedule, Villa house – Satisfaction without alterations
Appendix C:	Interview Schedule, Villa house – Satisfaction with alterations Interview Schedule, Villa house – Satisfaction without alterations
Appendix D:	Place Interview Schedule – Courtyard house Place Interview Schedule – Courtyard house

Acknowledgements

Praise be to Allah, Lord of the worlds; by His will the completion of this thesis is made possible; and may his blessing and peace be upon His Prophet Mohammed.

This research was undertaken to contribute in providing an appropriate treatment for the problems experienced by the Saudis residents from their homes in the central province of Saudi Arabia.

I would like to express my deepest gratitude to my supervisors, Professor Bob Giddings, Gordon Hudson and Dr. Manuel Cresciani, for providing me with such precise directions along the route to the completion of this work. They have always been generous and understanding with their critical views, challenging ideas and endless encouragement, and they guided me safely through my research when such guidance was dearly needed. I would like to thank all staff members in the Department of

Architecture and Built Environment for providing advice, encouragement and help in the preparation of this study.

I am greatly indebted to the Saudi Ministry of Higher Education and the Saudi Cultural Bureau in London for giving me this scholarship and for being so cooperative and helpful while I was carrying out this research. I am also indebted to Eng. Abdullatiff Abdulmalik Al-Shaikh, Eng. Ibrahim Al-Sultan and Eng. Ibrahim Al-Eid (Riyadh Development Authority) for their encouragement and valuable assistance. Thanks should also be given to Dr. Faisal Al-Mubarak, Dr. Ali Bahammam and all those who helped me, whether directly or indirectly, to complete my thesis.

My special thanks and gratitude to my mother (1945–2014), whose death came much too soon, my father, brothers and sisters for their prayers and continuous support.

Finally, I must extend my wholehearted gratitude to my wife and children: Ibrahim, Abdulaziz and Lina, for the heartfelt encouragement, patience and support which they gave me unconditionally during my study. I dedicate this study to my wife, Maha Al-Shiha, who should take credit for supporting me get to the end.

I humbly express my thanks to God, whose bounty, grace and gifts are innumerable.

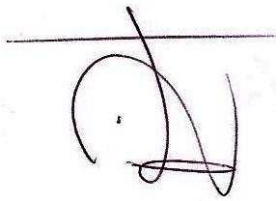
Declaration

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work.

Any ethical clearance for the research presented in this thesis has been approved. Approval has been sought and granted by the School of Built and Natural Environment Ethics Committee on 16 May 2011.

I declare that the word count of this thesis is 64,130 words.

Name: Majid Ibrahim Almehrej

Signature: 

Date: 26 April 2016

Glossary

ARAMCO	Arab-American Oil Company
ADA	Arriyadh Development Authority
PME	Presidency of Meteorology and Environment
CDSI	Central Department of Statistics & Information
MOHE	Ministry Of Higher Education

Introduction

Chapter 1

1.1 The Kingdom of Saudi Arabia

1.2 Variation in architecture style and urban pattern

1.3 Climate in Saudi Arabia

1.4 The beginning of the evolution

1.5 Statement of the problem

1.6 Aim and Objectives

- **1.6.1 Aim**
- **1.6.2 Objectives**

1.7 Scope of the research

1.8 Thesis structure

Chapter 1: **Introduction**

1.1 The Kingdom of Saudi Arabia

Saudi Arabia dominates the greater part of the Arabian Peninsula, an area of 2,149,790 km^2, which consists of narrow valleys on the coast of the Red Sea, with the Tihamah plains toward the west. On the east side of these plains is a range of mountains, including the mountains of Hijaz: Makkah, Al-Taif and Asir, with a height of 2000 m above sea level. In the centre of the Kingdom there are deserts and rocky hills, which constitute 90% of the surface area of the country; An-Nofud, with an area of 65,500 km^2, 3.2% of the total area of the Kingdom, located in the northern part of the country. Ar-Rub' al-khali, or the Empty Quarter, is the largest of these deserts, is uninhabited and located in the southern part of the Kingdom, with an area of 600,000 km^2, about 28% of the total area. In the east and along the coast of the Arabian Gulf are coastal plains (MOHE, 2011) (see Figure 1.1). According to the latest statistics from 2010, the Kingdom of Saudi Arabia has a population of 27,136,977, of which 31% are non-Saudis, and the population growth rate between 2004 and 2010 was 3.2% (CDSI, 2011) (see Figure 1.2).

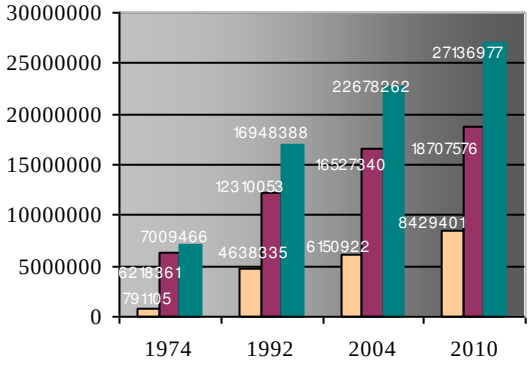
1.2 Variation in architecture style and urban pattern

Because of its large surface area, the Kingdom of Saudi Arabia has a diversity of climatic, social, topographical, environmental and cultural characteristics, which is reflected in diverse architectural styles and urban patterns throughout the country. A variety of materials are employed in traditional architecture: stone, wood and mud; each province is distinguished by its use of the local building materials, which have confirmed over time

Fig. 1.1: Map of Saudi Arabia

(Source: ezilon.com)

Fig. 1.2: Population of KSA in 2010: Saudi, non-Saudi and total



(Source: CDSI, 2011)

their effectiveness and efficiency in dealing with climatic factors, social and cultural requirements, as well as suitability for economic conditions (Turkustani, 2008). The development of architectural design values and ideas in addition to the technologies and the use of local building materials, generation after generation, constitute clear evidence of their ability to deal with climatic changes. These designs have also taken into consideration Islamic values such as maintaining the privacy of the residents and neighbours (Talib, 1984).

In order to simplify the climatic, social and cultural diversity of the different provinces of the Kingdom, Turkustani (2008) divides the Kingdom of Saudi Arabia into four principal geographic provinces: the central province (called *Najd*), the western province, the southern province and the eastern province (Figure 1.3). He addresses each area separately: *The central province* (*Najd)* represents the centre of the country in terms of geography, where urban settlements were formed on the banks of the valleys, such as the Hanifa valley, which extended 120 km from north to south, where those settlements emerged in the form of agricultural oases. As the province is located far from the eastern and western coasts, it has preserved its local heritage and has not been affected by the migratory architectural style from neighbouring countries. Therefore, the prevailing architectural style in the province is affected by the dry desert climate, and is limited to the use of techniques and local building materials such as stone and mud.

Turkustani (2008) and Eben-Saleh (1998, 2001) agree that the desert climate of this province was clearly evident in the urban fabric of the cities of the central province. This fabric is characterised by the compact urban pattern in addition to the narrow winding alleyways (Figure 1.4), which are used in order to minimise the effects of dusty winds and the impact of the hot sun.

Fig. 1.3: Provinces of Saudi Arabia

(Source: http://connect.in.com)

Fig. 1.4: Riyadh: part of the traditional urban fabric

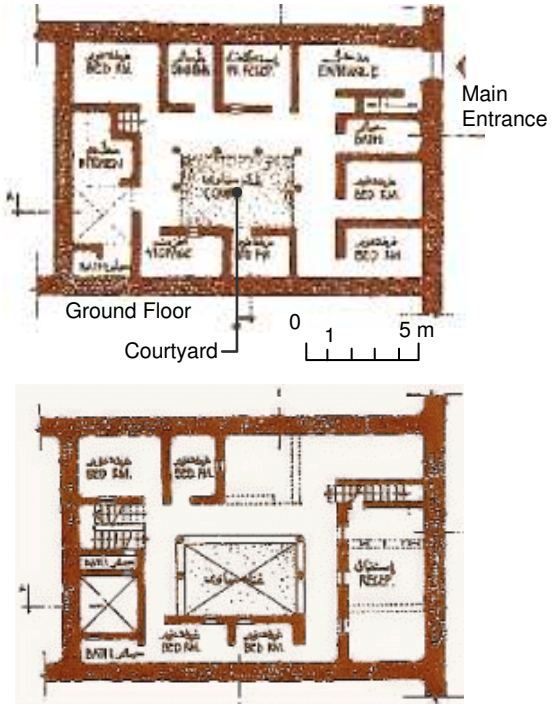
(Source: Eben-Saleh, 2001)

Regarding the traditional architectural features of the houses in the central province, Talib (1984) noted that the houses are characterised by the low number and the small size of external openings, which usually begin on the upper floor in order to reduce the impact of the hot and dry climate on the internal spaces of the house. Some houses are also characterised by multiple courtyards, surrounded by the living spaces. The courtyard, which provides light and natural ventilation, also has the role of regulating the temperature inside the house (Figure 1.5), besides providing shade in the daytime and preserving cold air at night to cool the buildings during the day (Eben-Saleh, 1998; Al-Sayed, 2011).

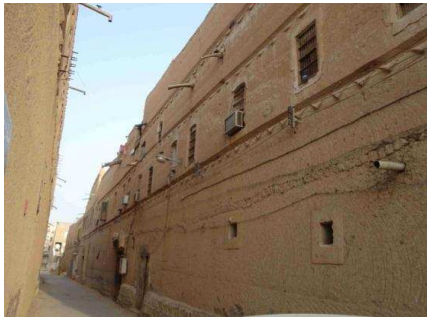
Bahammam (1998) adds that the inner courtyard has played a key role in the traditional house in the central province, in terms of the multiplicity of functions as an open private space where the family practises its external activities such as meetings and other events, in addition to providing a safe place for children to engage in their games.

Regarding materials and construction techniques used in the central province, Turkustani (2008) indicates that mud is used as a major construction material in the form of moulds, called *Al-Leben*, which is made by mixing mud with straw and water; the blocks made from this mixture are then dried under the sun before being used. Walls are built with a thickness of 60 cm in order to provide appropriate thermal insulation, as mud is characterised by its low thermal conductivity. He also added that limestone is used to build the foundations of some houses to protect them from the impact of rain. The ceilings are built of palm or tamarisk trunks (called *Al-Athel*), placed horizontally and covered with palm tree leaves, then topped with a layer of mud.

Fig. 1.5: Traditional house design: courtyard as a focal point



(Source: Bahammam, 1998)



Courtyard house: External Elevation

The western province includes large cities such as Mecca, Medina, Jeddah and Taif, all of which have been influenced by external and migratory cultures during the season of *Hajj* – the annual pilgrimage to Mecca – in addition to the presence of the seaport in the city of Jeddah, which made it an area of commercial relations with the countries bordering the Red Sea. This played a key role in bringing technology and new ideas as well as various cultures from around the Islamic world, which in turn characterised the style of traditional houses in the western province from other provinces of the Kingdom, particularly with regard to construction methods and architectural treatments.

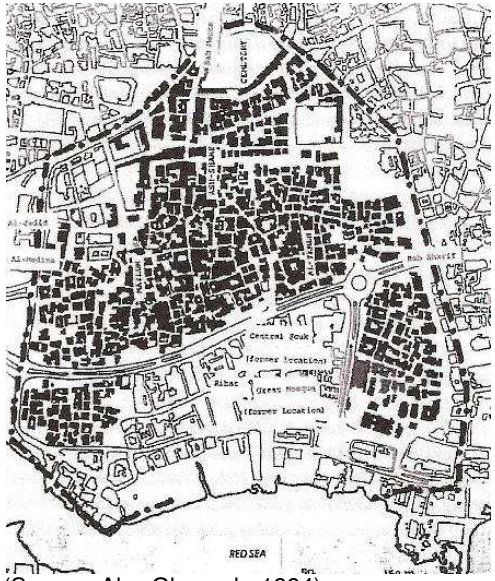
The urban fabric in the western province is similar to that in the central province in terms of the density of the built blocks and their interrelationships with narrow, winding alleyways to provide shade and cool air to the pedestrians (Turkustani, 2008). "The width of streets was determined by the need for two loaded animals to pass" (Abu-Ghazzeh, 1994, p.53) (see Figure 1.6). Abu-Ghazzeh (1994) adds that the cul-de-sac layout has constituted one of the characteristics of the urban fabric in the city of Jeddah, in addition to the hierarchy of external open spaces from public open spaces to semi-public spaces leading to the private open spaces reserved for one extended family (see Figure 1.7).

Regarding the architectural characteristics of the traditional houses in the western province, Turkustani (2008) and King (1998) emphasise the height of buildings – three or four storeys – in comparison to the traditional houses in the central province, which are one or two stories. In addition to the large number and width of external openings (windows) that are covered with *Mashrabiyah* as well as *Roshan* (Figure 1.8), wooden blinds made of wood lattice imported from India and the coast of East Africa (Yamani, 2011).

Fig. 1.6: Street width in the traditional city of Riyadh

(Source: http://www.Arriyadh.com)

Fig. 1.7: Urban fabric of Jeddah



(Source: Abu-Ghazzeh, 1994)

Covering windows in this way helps to preserve the privacy of the residents and neighbours, as well as allowing air passage to the internal spaces and reducing the sun's brightness during the day (Eben-Saleh, 2001; Turkustani, 2008).

Building material used in housing construction in the western province is a natural stone in two types: limestone coral, which is used in the coastal cities such as Jeddah and Yanbu'; and mountain stone, used in the cities of Mecca and Al-Taif (Turkustani, 2008).

The southern province is made up of small farming communities, spread out in different parts of the province, on mountain tops and on the west coast (Abdelaal, 1998). This province is characterised by climatic and topographic diversity, which in turn has created distinctive architectural styles in this province, based on building materials and construction methods. For example, the province located to the east of the Al-Sarawat mountains is characterised by a desert climate, hot and dry in summer with mild temperatures and lack of rain in winter (Abdelaal, 1998). Meanwhile, the mountainous areas, such as the city of Abha, which faces the Red Sea, are distinguished by moderate temperatures in summer and a higher rate of rainfall and cold in winter. The coastal areas are characterised mainly by a very hot climate with high humidity in summer and mild temperatures in winter.

Based on these differences, variety of building materials and methods of construction are used in building traditional houses in these three areas within the southern province of Saudi Arabia. Therefore, mud is used in the area with a desert climate, such as the city of Najran (Figure 1.9), while stone is added to mud in the higher-lying areas, e.g. the city of Abha (Figure 1.10).

Fig. 1.8: Mashrabiyah and Roshan

(Source: http://www.jeddah.gov.sa)

Fig. 1.9: Najran – architectural style

(Source: http://www.skyscrapercity.com)

Fig. 1.10: Abha – topography

(Source: http://www.asir.me)

In the mountainous cities such as Al-Baha (Al-Harthy et al., 1999) only mountain stone is used; while tree trunks, branches and dry grass with twisted ropes are used to construct residential huts in the cities of the western coast such as Jizan (Turkustani, 2008). The diversity of urban fabric in the southern province is due to the climatic and topographical conditions. In the eastern part of the Al-Sarawat mountains, in the city of Najran, with flat terrain and a desert climate, the urban fabric is characterised by compact urban patterns built of mud, which are very similar to that in the central province, while the residential areas located on the tops of mountains, such as the city of Abha, emerged in the form of small groups separated by farms affected by the mountain topography, as shown in Figure 1.11. The coastal area located on the Red Sea has high temperatures and humidity (Abdelaal, 1998), so it is important for the urban fabric to permit the passage of air between the buildings in order to reduce the heat and humidity in summer.

The architectural features of traditional houses in the southern province vary according to the diversity of topography and climate. For example, in the city of Najran, the plateau province, houses are built from mud brick (*Al-Leben*), similar to those in the central province of the Kingdom; while in the highland areas, such as the city of Abha, the foundations are constructed in stone, while the rest of the house is built with mud. In the coastal province, houses are built in the form of circular huts with conical roofs that aid the hot air and fireplace smoke to rise to the top of the hut. Usually the house (Figure 1.12) is made of number of huts within one courtyard surrounded by a wall of sticks and dry grass (Turkustani, 2008).

The eastern province of Saudi Arabia, the fourth and last province, is a group of settlements located on the east coast, including the cities of Ad-Dammam and Al-Khobar. The urban pattern in this province has been influenced by its proximity to

Fig. 1.11: Abha – mountains' topography

(Source: http://www.alriyadh.com)

Fig. 1.12: Jizan – house style

(Source: http://www.jazan.org)

neighbouring countries such as Iraq, Bahrain, Iran and India (Talib, 1984). As a result of its commercial role due to the presence of seaports, this province has contributed to the consolidation of trade relations between these countries, something which has conferred to the province a distinctive construction style.

As a result of the hot and humid climate in summer, the urban fabric in this province has emerged as a compact urban pattern with medium density, with low building heights of about two floors. In terms of the architectural features of traditional houses, the use of mud and coral stone as construction materials has arisen. The arrangement of joining the residential spaces in a house around an internal courtyard which regulates temperature during the day and the night is also used. This is similar to a large extent to the architectural characteristics of traditional houses in the central province.

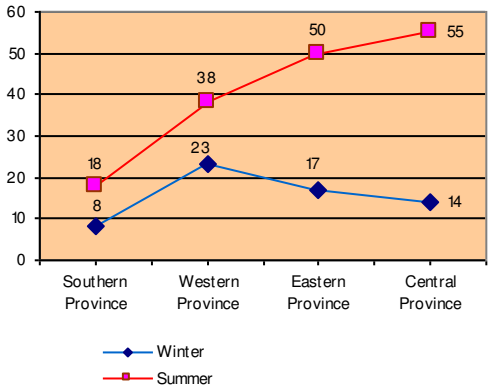
1.3 Climate in Saudi Arabia

The winter season, from December to February; sub-zero temperatures can be experienced mainly in the Southern Highlands (Asir province). Annual average temperatures in the winter season of 23℃ at Jeddah, 14℃ at Riyadh, and 17℃ at Dammam. The summer season from July to August; daytime temperatures may exceed 38℃ in all parts of the Kingdom. Temperatures in the desert areas rise to 55℃ in the summer (Figure 1.14). Humidity is usually low, except for the western and eastern coasts where it can reach high levels. Rain falls between May and October, but levels are low in all areas: 65 mm at Jeddah, 75 mm at Riyadh and Dammam, while the highland areas of Asir have up to 480 mm (Presidency of Meteorology and Environment (PME), 2011).

Fig. 1.13: Eastern Province – architectural style

(Source: http//:www.Mekshat.com)

Fig. 1.14: Climate in Saudi Arabia



(Source: Presidency of Meteorology and Environment (PME), 2011)

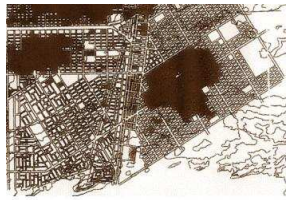
1.4 The beginning of the evolution

The evolution in the urban and architectural pattern in Saudi Arabia occurred nearly forty years ago. The traditional villages, towns and cities of Saudi Arabia have started to lose their indigenous identities and embody alien forms (Eben-Saleh, 1998). Evolution in the concept of street planning, and building using cement and reinforced concrete, compared to mud bricks or stone and wood roofs, as in conventional building, was first used by the Arab-American Oil Company (ARAMCO), in 1947. It was charged with planning the city of Al-Khobar and with planning the future expansion of the city of Dammam in the eastern province to control the growth around the oil areas. This created the first planned settlements in the Kingdom (see Figures 1.15, 1.16) (Al-Hathloul, 1981; Al-Said, 2003).

Furthermore, in the early 1950s, there were few Saudi architects, which was the reason that caused people to use ARAMCO's architects and engineers to produce modern designs for their villa houses (Al-Hathloul, 1981). As a result of the lack of local architects and engineers, the urban pattern and villa style introduced by ARAMCO was adopted and applied to the city of Riyadh (Al-Malaz district, as shown in Figures 1.17 and 1.18) (Al-Said, 2003). In this context, Alkhedheiri (2002) explains that the Al-Malaz district has had a significant impact on the pattern of urban development in the city of Riyadh and those of the Kingdom as a whole, which has become a standard pattern for the urban development of the state (as cited in Garba, 2004, p.11).

King (1998) notes that the imported villa house style was the result of two factors, which are: imported models and the modernisation phenomenon that dominated most of the cities in the Kingdom following the discovery of oil in 1950.

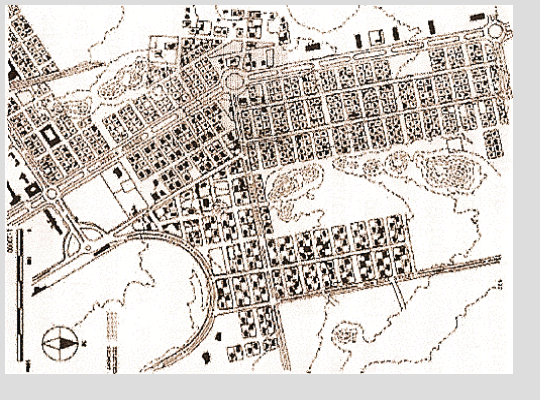
Figures 1.15 & 1.16: Al-Khobar planning and villa-house design by ARAMCO



(Source: Al-Hathloul, 1981)

(Source: Al-Naim, 2008)

Fig. 1.17: Al-Malaz district



(Source: Eben-Saleh, 2001)

Fig. 1.18: Al-Malaz, villa type design

(Source: Al-Hathloul, 1981)

Eben-Saleh (2001, p.185) adds that contemporary houses have setbacks on all sides of the building (see Figure 1.19) – which started with the American oil workers' desire to have detached villa style houses – that create an 'Island building' design, as he named it. This was imposed as one of the contemporary planning regulations, which was to provide ventilation and natural lighting to the spaces in the building. In addition to that, it facilitates access for the Fire Brigade in the event of a fire in one of the buildings. He notes also that the setback requirements created a fundamental problem for the typical Saudi family, which is the difficulty of preserving family privacy for internal and external open spaces surrounding the house.

Mubarak (2004) indicates that in the 1950s, non-traditional building materials and construction methods were imported and used for the first time. Fragile clay bricks were replaced by the more robust cement blocks. He adds that the reason why householders adopted modern concrete buildings is due to the following factors: first, the ability of construction industry techniques to produce large quantities of concrete blocks at low cost compared to clay bricks. Second, the houses built with concrete proved to be compatible with modern services such as electricity and sanitary installations. Third, cement-based building methods offer multiple options for interior decoration, use of space, and a variety of sizes for the internal spaces, compared with the small spaces in mud buildings built based on load bearing walls with a thickness of 60 cm, and comparatively short spans of timber beams/joists.

1.5 Statement of the problem

The traditional form of the Arab town was dictated by both its natural environment and the religion of its inhabitants (Moustapha et al., 1985). Islamic values and cultural convictions, as well as socio-economic factors, played critical roles in ordering and forming the built environment (Mubarak, 2004). The mid-1950s marked the period of Saudi Arabia's first rapid economic growth as a result of the discovery of oil (Eben-Saleh, 1998), which dramatically increased the wealth and prosperity of the population, resulting in a new lifestyle (Bahammam, 1998).

This change caused the promotion of internal migration from villages to major cities in search for a better life, causing an increase in housing demand, which forced the state to start providing new infrastructure and roads (Al-Ibrahim, 1990) through a policy of demolishing parts of the old neighbourhoods and traditional houses (Eben-Saleh, 1998). In addition, government programmes such as providing free plots of land plus long-term interest-free loans to Saudi citizens were the key factors that made it possible to build more

and bigger houses (Al-Saati, 1987; Bahammam, 1990).

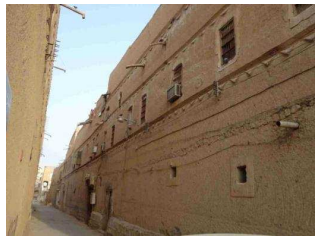
Subsequently, the state adopted this modern grid pattern and villa style for development in all cities of the Kingdom (Al-Hathloul, 1981). Planning became regulated, which includes building heights of no more than eight metres; a building footprint of not more than 60% of the site; and setbacks on all sides of the building (a minimum of two metres) (Al-Said, 2003).

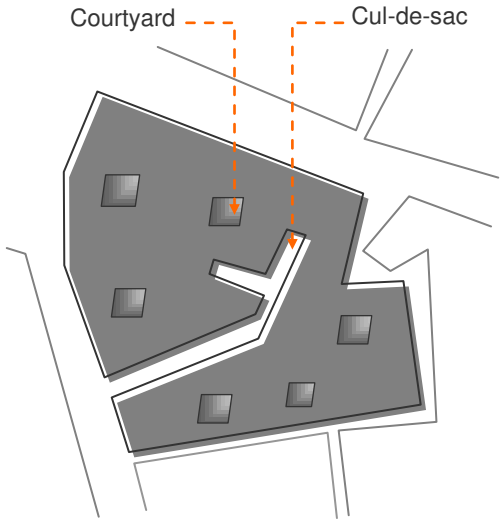
This has now become the contemporary house style (see Figure 1.19). Whereas, traditionally, the building enclosed a private courtyard, this contemporary type is a building surrounded by space, exposed to the climate and the gaze of onlookers (Al-Ibrahim, 1990).

Therefore, despite the commonsense approach of traditional house design, people view it as part of a past that they do not wish to revisit. Saudi residents desire new technology but they also wish to preserve their identity and traditions: “people should not have altered their lives to fit their homes; rather the home should meet their needs and fulfill their desires” (Eben-Saleh, 1998, p.585).

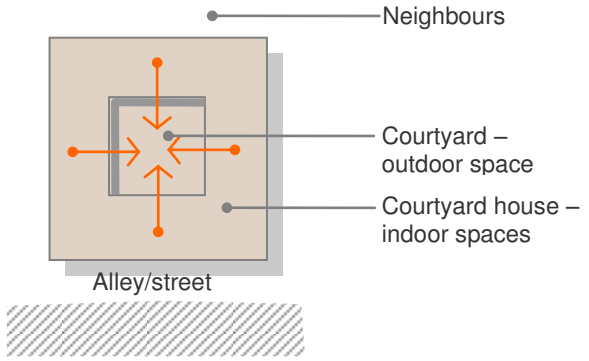
Figure 1.19: Comparison between courtyard and villa houses

(Source: yourwonder.com)





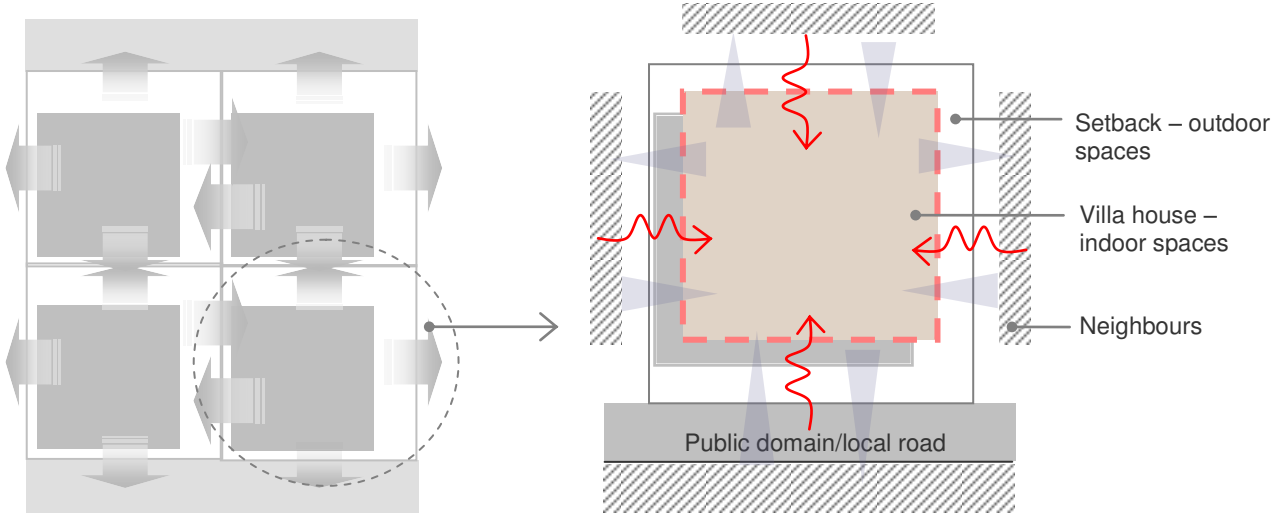
Group of houses; inward-oriented



Courtyard-House

Villa-House

(Source: Trekearth.com)



Group of houses; outward-oriented

1.6 Aim and Objectives

1.6.1 Aim

In the light of the fundamental problems of the villa house style, this study aims to highlight the need for a specific contemporary home style where both the treatment of place and the house design meet all the needs of Saudi households. The output of this research will be guidance for house design that could satisfy 21st century aspirations while still respecting Islamic culture and traditional values.

1.6.2 Objectives

In order to achieve the overall research aim, the study will accomplish a number of objectives as stated below:

- To investigate the fundamental principles of home.
- To understand the influence of Islamic culture upon the home.
- To demonstrate the nature of both types of house (courtyard and villa).
- To measure the extent of satisfaction of the residents.
- To identify features that should be included in the layout and design of houses to meet residents' needs.

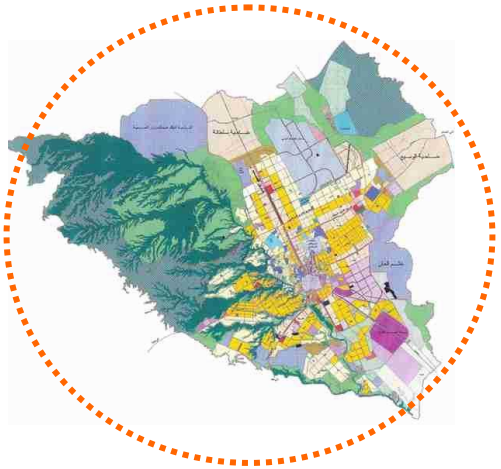
1.7 Scope of the research

Due to variations in climatic, topographic and cultural characteristics among the different provinces of Saudi Arabia, the framework will only directly apply to one province and its capital city. It is proposed that the framework will be applied in the central province, which has a hot and arid climate, and comprises three regions: Riyadh, Qasim and Hail (Figure 1.20). Of these, Riyadh region has been selected as the most populated, and the capital, Riyadh, will be used to represent this region (Figure 1.21).

Fig. 1.20: Map of Saudi Arabia: the central province

(Source: http://www.dreamstime.com)

Fig. 1.21: A plan of Riyadh



(Source: http://www.Arriyadh.com)

1.8 Thesis structure

Following the introduction, **Chapter 2** focuses on clarifying the concept of home and its fundamental principles: human needs, place, and house.

Chapter 3 analyses the extent to which Islamic culture has influenced Saudis' homes in terms of three key principles of the home – human needs, place and house. The chapter will clarify how Islamic culture affects the entirety of Islamic life, including the built environment, of which the home is an integral part.

Chapter 4 presents the historical development of domestic accommodation in Saudi Arabia. It reviews the different styles of accommodation starting from tents, moving to the courtyard house and ending with the villa. Through a review of the literature, this chapter focuses on identifying the characteristics of each style, what factors it is influenced by and the extent of its ability to achieve the needs of the occupants and respect the setting at the same time.

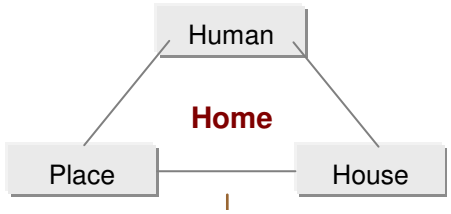
Chapter 5 outlines the research methodology. It explains the selection of suitable and efficient methods to examine the principles of the home – human needs, place and house – for both the courtyard and villa house styles.

Chapter 6 presents and analyses the collected data. The variety of data collected by different qualitative and quantitative methods illustrate to what extent the treatment of place and the house design meet residents' needs. The chapter focuses on different issues such as residents' satisfaction and dissatisfaction, place identity and attachment; house types and internal arrangement.

Chapter 7 presents the proposition of this research: design guidelines based on the positive and negative features of each house type and its neighbourhood.

Chapter 8 states the key contributions established from this research, with the conclusions drawn and possible areas for future research.

Home: Notion and Fundamental Principles



2.1 Introduction: Theoretical framework – culture

2.2 Home notion and fundamental principles

- **2.2.1 Human needs**
- **2.2.2 Place**
- **2.2.3 House**

2.3 Home: the combination of human needs, place, and house

Chapter 2: **Home: Notion and Fundamental Principles**

2.1 Introduction: Theoretical framework – culture

To be able to investigate the subject of this thesis, it needs to be underpinned by theories of cultures. Therefore, a survey was undertaken and revealed that there are a number of them. These are the principal theories: systems, structuralism, sustainability, motivational, and cultural ecology.

Systems theory is gradually being rediscovered in the social sciences, and it has been enthusiastically embraced in the biosocial sciences (psychology, neuroscience, human biology) since the mid-1990s. Systems theory implies an explanation of how social systems work. It is more than a set of descriptions of various social systems with an emphasis on their communication systems. Any system has characteristics that are the result of its structure (or architecture) and environment (emergent properties) (Pickel, 2007).

Systems theory does much to render the complex dynamics of human bio-psych-socio-cultural change comprehensible. The advantage of systems theory is its potential to provide a transdisciplinary framework for a simultaneously critical and normative exploration of the relationship between our perceptions and conceptions and the worlds they purport to represent (Laszlo and Krippner, 1998). For others like Binford (1968), culture – as a system – serves to relate human communities, individuals and groups to their ecological settings. The systems approach is based on the fundamental principles that all aspects of a human problem should be treated together in a rational manner (Skyttner, 1996).

Skyttner (1996) refers to Hegel's contribution about the nature of systems as follows: the whole is more than the sum of the parts; the whole defines the nature of the parts; the parts cannot be clarified by studying the whole; and lastly, the parts are dynamically interrelated or interdependent.

Structuralism theory is defined by Levi-Strauss as a logical grid of binary oppositions, combining rational modes of classification (Strinati, 1995). Levi-Strauss views cultures as shared symbolic systems that are cumulative creations of mind, which imposes a culturally patterned order of relations and transformations on a continuously changing and often random world (Keesing, 1974). Wright (1975) contends that western civilisation has evolved through three stages: classic, transitional and professional. Thus, to

understand the social meaning of a myth, it is necessary to analyse not only its binary structure, but the progression of events and the resolution of conflicts (Storey, 2012). The structural approach focuses on the role and workings of the cultural system rather than the role of the human subject (Smith and Riley, 2009).

Sustainability Theory, The Brundtland Commission, an organisation that was created in 1983 to promote integrated global sustainability, focused on meeting current human needs without compromising the ability of future generations to meet their own needs (Scammon, 2012). Cultural sustainability is defined as the ability to retain cultural identity, and to allow change to be guided in ways that are consistent with the cultural values of inhabitants (The Sustainable Development Research Institute, 1998). *Developing, renewing and maintaining human cultures creates* positive, enduring relationships with other people and the natural world (Cultural sustainability, 2015). The theory of Sustainability attempts to prioritise and integrate social responses to environmental and cultural problems. An economic model seeks to sustain natural and financial capital; an ecological model looks to biological diversity and ecological integrity (Jenkins, 2015).

Cultural sustainability examines ways to improve our lives and leave a viable inheritance for future generations; it involves efforts to preserve the tangible and intangible cultural elements of society in ways that promote environmental, economic and social sustainability. It examines ways to enhance our cultural identity and sense of place through heritage, shared spaces, public art, social capital, educational opportunities, and public policies in ways that promote environmental, economic and social sustainability (Scammon, 2012). Cultural sustainability is concerned with actions and issues that affect how communities manifest identity, preserve and cultivate traditions, and develop belief systems and commonly accepted values (Werbach, 2012).

Zhang (2013) defines cultural sustainability as the adaptation and transmission of the beneficial parts in a nation's material and spiritual culture that are conducive to the development of their present and future generations. It is mainly concerned with the continuity of cultural values linking the past, present and future (Al-Hagla, 2005). Cultural sustainability requires framing the present and the future by adopting and absorbing past wisdom. The survival of local values should constitute the backbone of sustainability, especially in countries with traditional cultures (Ozcan, Gultekin and Dundar, 1998).

Based on the definition of cultural activity as an individual or group activity that involves promoting participants' values and belief systems (Zhang, 2013), Hawkes (2011)

predicates that a healthy society depends on lively and influential cultural activity among the communities within it. Thus, sustainability can only be achieved when it becomes an enthusiastically embraced part of our culture. Therefore, cultural activities function as a catalyst and indicator for cultural sustainability. As a result, Zhang (2013) argues that the courtyard house has traditionally facilitated lively cultural activities, festivities and rituals associated with birth, marriage and death. These practices can still be observed in many courtyard houses in China and elsewhere (Ujam, 2006).

Cultural heritage connects people to place through an identity and values, and the continuance of that heritage is what cultural sustainability is about. Cultural sustainability projects benefit the environment through the preservation of cultural capital such as buildings that retain a community's heritage. Cultural capital can be produced or preserved with environmentally friendly materials. However, each culture's values are not static; they evolve over time, thus first shifting local views of what defines sustainability and then creating paradigm shifts in the sustainability worldview (Scammon, 2012).

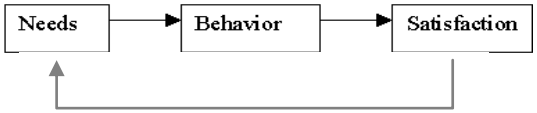
For a practical application of cultural sustainability, respect must be shown to the history and character of whatever gives a community a sense of place. Whatsoever it is about a place that denotes a community's heritage – which could be a physical landmark or a ritual – should be included in sustainability applications (Scammon, 2012).

Motivational Theory, Berelson and Steiner (1964) define the term "motive" as an inner state that energises, activates or moves and directs individuals to channel behaviour towards goals. In other words, motivation is a general term applying to the entire class of drives, desires, needs, wishes and similar forces. Eze (1995) describes motivation as a psychological process initiated by the existence of a human need and involving a goal, a purposive activity directed towards reaching a goal and thereby satisfying needs. The process can be understood in its simplest form as a three-step process: first, there is an internal need; second, a behavioural action or direction to satisfy that need; and third, the accomplishment or the satisfaction of the need. It may therefore be viewed as a set of individual relationships that explains the direction and persistence of an individual behaviour.

Motivation is the answer to the question "Why we do what we do?" The motivational theories try to figure out what the "M" is in the equation "M motivates P" (the motivator motivates the person). Motivational theories can be classified broadly into two different perspectives: content and process theories. Content theories deal with "what" motivates people and are concerned with individual needs and goals. Maslow, Alderfer,

Herzberg and McCelland studied motivation from a "content" perspective. Process theories deal with the "process" of motivation and are concerned with "how" motivation occurs. Vroom, Porter and Lawler, Adams and Locke studied motivation from a "process" perspective (Özgür-Zan, 2015). Overall, Figure 2.1 illustrates the basic perspective on motivation.

Fig. 2.1: The basic perspective on motivation



Source: www.analytictech.com

In other words, individuals have certain needs, and this causes them to do certain things (behaviour) which satisfy those needs (satisfaction), and this can then change which needs are primary (either intensifying certain ones, or allowing them to move on to other ones).

Several theories of motivation belonging to Maslow, Herzberg, McClelland and Alderfer have been provided to help explain needs as a source of motivation. In the early 1940s, Abraham Maslow formed a theory based on his definition of human need, which proposes that humans are motivated by multiple needs and that these needs exist in a hierarchical order of their importance: physiological needs, safety needs, and needs for belonging, self-esteem and self-actualisation. His premise is that only an unsatisfied need can influence behaviour; a satisfied need is not a motivator (Aina, 2014). Later, McClelland (1961) built on this work. He identified three motivators that he believed we all have: a need for achievement, a need for affiliation and a need for power. People will have different characteristics depending on their dominant motivator (Eyre, 2015).

All people have needs that they want satisfied. Some are *primary needs,* such as those for food, sleep, and water – needs that deal with the physical aspects of behaviour and are considered unlearned. These needs are biological in nature and relatively stable. Their influences on behaviour are usually obvious and hence easy to identify. *Secondary needs,* on the other hand, are psychological, which means that they are learned primarily through experience. These needs vary significantly by culture and by individual (Motivation Theories, 2015)

McClelland's acquired needs theory (1967) recognises that everyone prioritises needs differently. McClelland also believes that individuals are not born with these needs, but that they are actually learned through life experiences. Alderfer (1972) proposes that unsatisfied needs motivate behaviour, and that as lower-level needs are satisfied, they become less important. Higher-level needs, though, become more important as they are satisfied, and if these needs are not met, a person may move down the hierarchy, which Alderfer calls the "frustration–regression principle".

Cultural Ecology Theory. This considers how environmental forces influence humans and how human activities affect the biosphere and the Earth itself (Kottak, 2009). The study of the environment's effects on humans was especially prevalent in the 1950s–1970s when Julian Steward founded the anthropological theory of cultural ecology. Steward (1955) defines cultural ecology as a heuristic tool for the understanding of the effect of environment upon culture. Steward defines cultural ecology as the way to explain the origin of particular cultural features and patterns which characterise different areas. Furthermore, he emphasises the role of cultural ecology as a methodological means to ascertain how the adaptation of a culture to its environment may entail certain changes.

Cultural ecology focuses on how cultural beliefs and practices, which help human populations, adapt to their environments and live within the means of their ecosystem. It contributes to social organization and other human institutions. Cultural ecology also interprets cultural practices in terms of their long-term role of helping humans adapt to their environment (Kottak, 2009). Steward's (1955) primary arguments were that cultures in similar environments may have similar adaptations; all adaptations are short lived and are constantly adjusting to changing environments; and changes in culture can elaborate existing culture or result in entirely new ones. He coined the term "cultural ecology" to describe his approach and is frequently referred to as the father of ecological studies in anthropology (Sutton and Anderson, 2010).

Cultural ecology seeks to explain the social sciences by the means of the natural sciences. It uses environmental pressures as explanations for cultural change. It therefore recognises the different ways in which different societies adapt, not as a result of intelligence, but as a result of their climate (Marquette, 1998). The basic concept of Steward (1955) is the idea of the "culture core", which is comprised of the basic characteristics of social and economic life that are most directly related to subsistence in a given place. These features include the technological strategies and material practices that local cultures build up to adapt to the ecological conditions of their home place; technology is adapted to exploit the environmental conditions in place. Thus, cultural multiplicity emerges from ecological diversity, as is evident in the variety of technologies and material practices of subsistence among different cultures; mountain cultures develop different strategies and techniques of subsistence when compared to plains, desert or rainforest cultures, etc.

Based on the above survey of cultures, there are certain theories not relevant to this study, which are systems and structuralism. In addition, there are certain

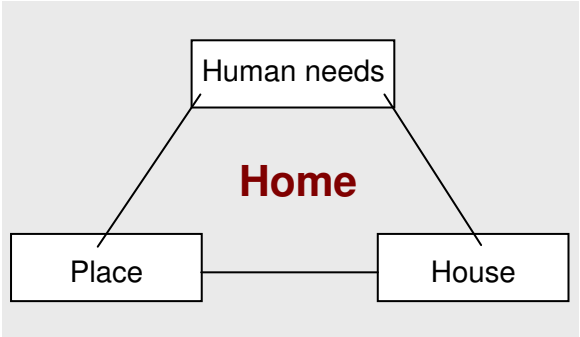
ones that are relevant, which are: sustainability, motivational and cultural ecology. These theories identify human needs, place and house as the main issues.

2.2 Home: Notion and fundamental principles

This chapter focuses on clarifying the concept of home and its fundamental principles: human needs, place, and house. "*Home*" can have different meanings to different people. It exceeds the physical form of a shelter; it includes the social relations between individuals and groups living within that place (Cieraad, 1999). It has an emotional meaning, which is formed through the mutual relationship between residents and their places of residence (Dovey, 1985). This definition is confirmed by Sudjic (2009) and Blunt and Dowling (2006) who illustrate that *Home* has a notion that exceeds the functional aspect to include – in addition to that – the emotional aspect. It is regarded as a place where persons can assert their identities, a place of privacy; i.e. free from outside intervention (Holloway and Hubbard, 2001). It is a set of symbols, dreams, ideas and aspirations (Lantz, 1996; Becker, 2003; Twigg, 2006).

Home is more than just a structure; it is a significant socio-geographic concept that comprises social relations (Blunt and Dowling, 2006). Oswald and Wahl (2005, p.11), conclude that home is a kind of relationship "transaction" between people and their environment, which changes over time and leads to behavioural, emotional and cognitive bonding with a meaningful physical setting. Home is defined as an entity comprising of interrelated qualities of people and environment (Altman and Rogoff, 1986; Werner et al., 1988). It helps in expressing a large range of environmental (as a place) and cultural (as human needs) experiences; a house form is generated gradually as a result of interactive forces between the dwellers and the physical environment (Al-Naim, 2006). For Cristoforetti, Gennai and Rodeschini (2011), home acquires the meaning of a place that has the ability to provide variety of occupants' needs such as safety, security, and privacy. To conclude, *Home* is the interaction between people, places and objects (Figure 2.2), forming a set of socio-cultural ideas about the relations of people to each other, and their relationship with places, spaces and objects (Mallet, 2004).

Fig. 2.2: Home as an interaction between human needs, place and house



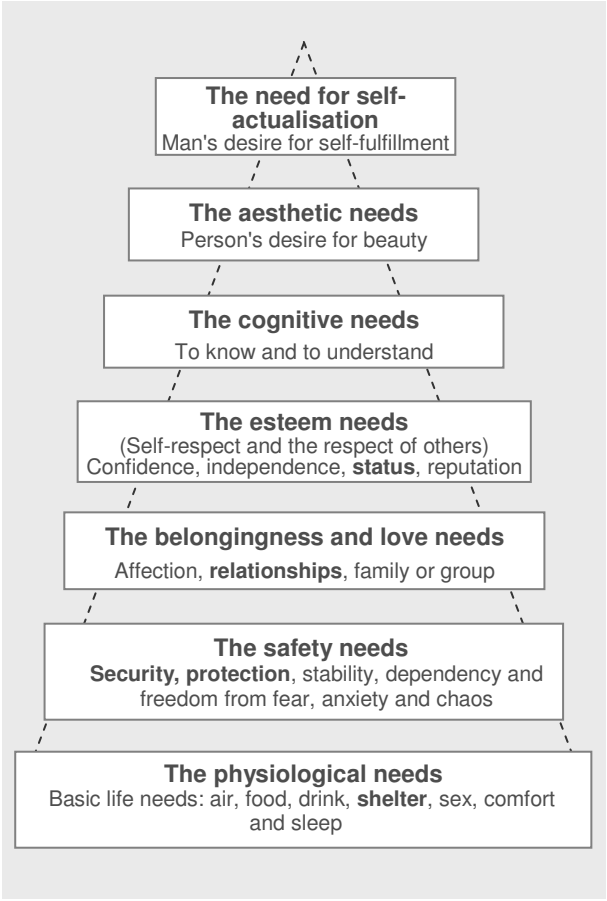
2.2.1 Human needs

According to Max-Neef (1992), human needs are the same at all times and in all cultures. Human needs are often closely related to the human desire to avoid harm (Doyal and Gough, 1991). Al-Naim (2006) notes that they are many, have no fixed order, and might have different meanings for different people. In this context, Gomes (2011, p.257) argues that human needs differ from person to person, influenced by different factors such as "individual preferences, historical and social context, and economic conditions".

Maslow (1954) classifies human needs according to their priorities; i.e. basic needs always come first, and when they are satisfied, new needs emerge. Therefore, Maslow (1954) organises human needs as follows: first, physiological needs, such as air, food, drink, shelter, warmth, sex and sleep. He asserts that the physiological needs constitute the most important of all needs. Second, safety needs, which include: security, protection, stability, dependency, and freedom from fear, anxiety and chaos. Third, the need for belonging, love or the need for connection – relatedness and tenderness (Anderson et al., 2000), where a person is seeking to have friends, a wife and children. He is thirsty for compassionate relations with other people. The need for esteem or respect constitutes the fourth need, which may include human desire for reputation, adequacy, status, dominance and attention. Next is the cognitive need, the desire for knowledge and for understanding. The sixth is aesthetic needs, such as beauty, balance and order. Finally, the need for self-actualisation; the desire for self-fulfilment (see Figure 2.3).

Simply, Maslow (1954) ranks human needs from basic needs for shelter and safety to higher needs such as belonging, love, respect and self-esteem to the highest level of needs, self-actualisation.

Fig. 2.3: The hierarchy of human needs



(Source: adapted from Maslow, 1954).

For the purpose of this study, the scope of human needs will be confined to those related to the home: shelter; i.e. climatic comfort, safety and security, privacy, status, and aesthetics, which expresses itself in the external appearance of a house.

Oliver (1987) predicates that the term “shelter” refers to the need for a defensive enclosure which protects humans from unwanted climatic conditions such as severe rain and winds. Rapoport (1969) emphasises the supreme importance of shelter as a human need; where humans can shelter themselves against the extremes of weather and climate.

As for safety and security needs, there is no doubt that safety and security are inevitable needs for people in order to survive and prosper, physically and psychologically (Anderson et al., 2000). In terms of privacy, Fried (1970) and Rachels (1975) insist that privacy, as a need, is essential for humans to achieve intimate relationships. It protects individuals from intrusion of others through substantial contact, private information, or observation (Bok, 1982). Privacy, as defined by Matthews (2008), is morally important for two reasons: enhancing autonomy and individual dignity; and producing a space to maintain individuals' intimate social relationships. Further, he adds that people have two approaches in this regard: first, privacy consists of the ability to manage access to one's person; second, it consists of some kind of barrier to access between the public domain and a private person.

Rapoport (1969) asserts that the need for privacy is one of the basic needs, which has no fixed definition among different cultures; thus, achievement of privacy has different forms related to the separation of domains. Privacy has two models: the informational and the perceptual (Matthews, 2008); for the purposes of this study, the perceptual model is the one concerned. As for status, Maslow (1954, p.44) points out that every person has a need or desire for "self-respect, or self-esteem, and for the esteem of others". Thus, the desire for status constitutes one aspect of the pursuit for self-esteem; i.e. people feel more confidence once their self-esteem has been satisfied.

In regards to the external appearance (aesthetics), each person has a specific level of ability that enables him to distinguish beauty. This ability may differ from person to person depending on various factors such as genetic structure, living environment and education. Nevertheless, people may share the same sensation for an object that carries a certain aesthetic (Danaci, 2012). Further, Danaci states that aesthetics in architecture are linked to style, which comprises several elements such as harmony, diversity, symmetry, order, equilibrium and scale. For Ornstein (1992, cited in Kowaltowski, 1998, p.301), volume and mass, complexity of

form and pattern, rhythm, texture, colour, roof line, light effects and size all constitute significant features for aesthetics in architecture.

In traditional architecture, aesthetics are associated with a set of elements: complexity, solid to void, fenestration, massing volumes, articulation of building elements, level changes, light and shade variations, efficient use of resources, effectiveness of response to climate, and clear linkage with natural elements (Rapoport, 1989). On the other hand, Uzunoglu (2012) argues that unpleasing forms, shapes and styles of architecture create disordered built environments that have negative effects on city inhabitants, visually, mentally and psychologically. Ugliness in house appearance is associated with lack of identifiable colour or form, absence of decorations, lack of maintenance, uniformity and diversity. Overall, Figure 2.4 summarises the foregoing on human needs.

2.2.2 Place

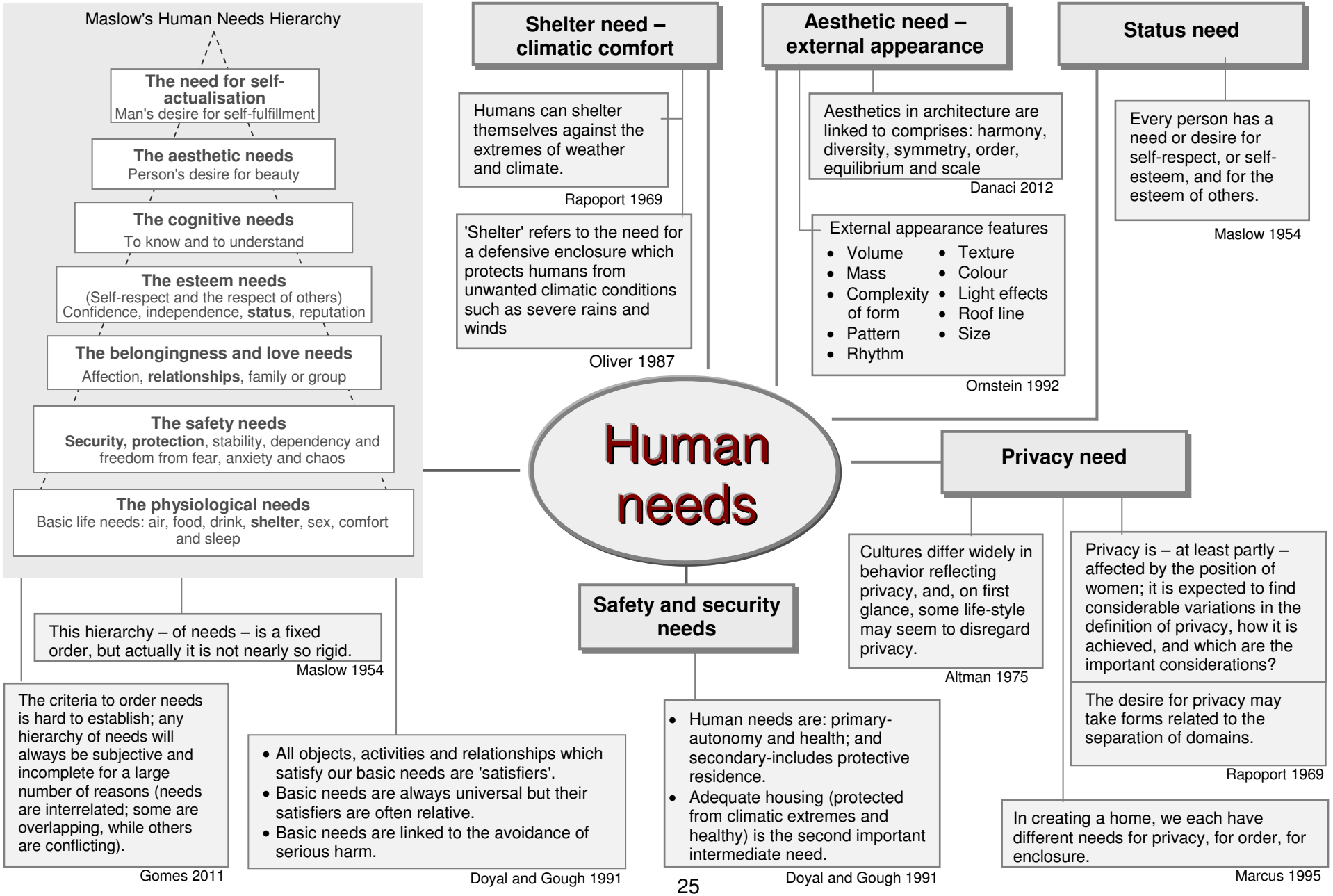
Place is an identified topic within several different disciplines such as Philosophy, Geography, Sociology, Psychology, Urban Planning, Architecture, and Environmental Science. Each discipline has its own perspective on place.

From a philosophical perspective, Casey (1997) discusses the notion of place and states that people are immersed in a place, and cannot act without it. People live in places and communicate with others in them. Human place is part of the natural order; humans live as part of the natural and biological world, respecting all the rules of nature (Preston, 2003). For Malpas (1999) and Sack (1997), place constitutes the experiential fact of our existence, thus people cannot produce anything unless they are in a place.

In the geographical approach, place as a term is used mainly in studies related to the spatial concepts, which are associated with region (Passi, 2002; Cresswell, 2004), settlement, location or position on the surface of the earth (Foote and Azoryaha, 2009). In the early 1970s, this spatial interpretation had a new notion driven by human geographers, such as Tuan (1974) who coined the term “topophilia” – the love of place; and Relph (1976) who coined the terms “place and placelessness”. Their approach to place is drawn from phenomenology, the interpretive study of human experience that is concerned with the person's attachment to specific places (Holloway and Hubbard, 2001; Tuan, 1974). It is a broader concept than just a location as it includes a sense of place by which place becomes a meaningful location (Agnew, 1987).

Sociologists also address the term “place” as more than just geographical location. Cresswell (2004, p.2) points out that everything "has a socio-geographical basis", and he describes place as a sort of

Fig. 2.4: Human Needs – the main five needs related to "Home"



relationship between a person and a certain location or building. Gieryn (2000) outlines place as having three essential and associated features – the first is geographical location. Second, the physical, in which place is a substance, a set of elements or objects at a specific spot in the universe, formed by people who interact within it (Habraken, 1998). Third, place has to do with investment in meaning and values. In this context, Cristoforetti et al. (2011) demonstrate the relationship between people and a place as a set of feelings affected by the setting of that place, which in turn enhances the sense of belonging.

People's attachment to a place can be influenced by religion through the design of the city, neighbourhood and home (Sopher, 1967; Mazumdar and Mazumdar, 2004). A sense of place, from the sociological point of view, is how to attribute a meaning to a built form (Rotenberg and McDonogh, 1993). Place has an influence on the ranking of city neighbourhoods in terms of quality of life; as a result, a study by Larson et al. (2013, p.231) about sense of place and people's attitude towards an environment defined seven variables that affect the relationship between people and a place, namely:

> length of time a person stays in a place; location of residence; where they were born; community involvement; membership of associations; whether they feel respected; and whether are considered a local.

Giuliani (2003) defines “attachment” as the feeling people experience towards certain places and to the communities that the places help to define and that are themselves defined by the places – home (family, relations, friends), workplace (colleagues), church (fellow worshippers), neighbourhood (neighbours), city, country. Place attachment can be defined in terms of an individual’s effective or emotional connection to a spatial setting (Jorgensen and Stedman, 2001).

Attachment to a place is a set of sensations about a geographical location that emotionally connect an individual to that place (Cristoforetti, Gennai and Rodeschini, 2011). For Norberg-Schulz (1980), dwelling means belonging to a concrete place. He predicates that people's daily actions have a connection with specific places, which in turn create feelings for those places. In this sense, he indicates that individual's identification depends on his belonging to a place.

Altman and Low (1992) point out that house attachment can be shaped through three elements: physical setting, geographical location and the meanings people invest in; a neighbourhood with better quality housing stock is more likely to have strong emotional bonds with its residents. In Hidalgo and Hernandez (2001), the results illustrate that place attachment develops to different degrees towards places with different spatial ranges: house, neighbourhood and city. In

addition, two components of place attachment generally come together and become a general affective feeling towards the place of residence, in its physical as well as its social dimension.

Attachment to place is considered a fundamental human need (Relph, 1976), a need that contemporary society is increasingly unable to satisfy owing to its tendency towards gradual spatial uniformity, increased mobility and hence a purely functionalistic relationship with places (Giuliani, 2003). For Gerson, Stueve and Fischer (1977), individuals choose to be attached to their neighbourhood in various ways that depend on their personal needs, opportunities and resources, as well as on the characteristics of the neighbourhood and their home.

From a psychological perspective, Altman and Law (1992) note that people develop bonds with places that can satisfy their needs such as privacy, security and serenity. The relationship between individuals and place has two dimensions: an emotional dimension, which is the emotional bond toward a place (known as place attachment), and a cognitive dimension, which refers to self-awareness as part of a physical place (Rollero and Piccoli, 2010). Neighbourhood attachment is formed by features of the built environment and perceptions of that environment (Hummon, 1992).

For other psychologists, the relationship between place and people – individuals and groups – and how it influences their identities is the central focus of their studies. Place identity is defined according to the degree of involvement between a person or group and a particular place (Relf, 1979). Watson and Bentley (2007) argue that place identity has a great influence on individuals' and groups' identities which result from a reflection of cultural meanings existing within their built environments. For Relf (1976), three interrelated elements shape the identity of a place; physical features or appearance, observable activities or functions, and meanings or symbols.

Place identity is a substructure of self-identity, much like gender and social class, and is comprised of perceptions and comprehensions regarding the environment. These perceptions and conceptions can be organised into two types of clusters; one type consists of memories, thoughts, values and settings, and the second type consists of the relationship between different settings (home, school and neighbourhood) (Proshansky and Fabian, 1987).

"House" constitutes one of the objects that people use most to express their identity. It is an important part of the communicative system through which people exchange information about status as well as about values and meanings. A person usually personalises his house through the building

itself, as well as through the landscape in which it is set and the furniture it contains as a means of expressing his distinctiveness; i.e. through these elements, messages are communicated about the inhabitants' status, taste and values (Duncan, 1981).

Zumthor (1998, p.7) points out that thoughts need to be able to express themselves: “thought travels through a specific space which contains traces of place and architecture”. Zumthor gives a lot of attention to the embedding of buildings in the landscape; he connects the object to its place. Marchand (1984) notes that the house – as an object of value – can function as a sign value; i.e. a message of difference and status. Norberg-Schulz conceives of people’s life world as a basis for orientation and identity; he seeks meaning and symbolic function through understanding the systematic pattern of the settlement (Norberg-Schulz, 1980, 1985).

People personalise their homes with decorations, so that their houses and gardens reflect and communicate who they are (Despres, 1991; Rapoport, 1982). When attachment to place grows, an individual starts to identify himself with this place, both at a larger scale (nation, city, etc.) and at a smaller scale (workplace, neighbourhood, home, rooms) (Giuliani, 2003). Home is very important in most people's lives, and consequently, it is significant in influencing identity (Relph, 1976).

A house is a group of dedicated places for various activities that require different properties to suit varying cultures, taking into account its environmental conditions (Norberg-Schulz, 1980). In this context, Norberg-Schulz adds that the environment has a spatial structure that facilitates orientation and consists of concrete objects of identification; i.e. the environment's character categorises man's identity.

Norberg-Schulz (1980) points out that human identity is a function of the character of places and depends on one’s belonging to a specific place. Alternatively, that place, in addition to its previous roles, helps in symbolising the life experiences of its users. At a symbolic level, buildings are a projection of the human psyche into the outer environment, and different parts of a house come to have special meanings. House is one of the greatest powers of integration for the thoughts, memories and dreams of mankind. The binding principle in integration is the daydream. Past, present and future give the house different dynamisms, which often interfere with and at times oppose each other, yet stimulate one another (Bachelard, 1994).

Houses often appear in dreams and the different parts of them have different meanings for the individual. The various floors are related to the vertical and spatial symbols. The roof and upper floors correspond to the head and mind, as well

as the conscious exercise of self-control. Similarly, the basement corresponds to the unconscious and instincts. The kitchen, since it is where foodstuffs are transformed, sometimes signifies the place or the moment of psychic transmutation in the alchemical sense. The stairs are the link between the various planes of the psyche, but their particular significance depends upon whether they are seen as ascending or descending (Teillard, 1951).

Spottiswood (2008) points out that houses are a projection of the human psyche into the outer environment, and different parts of a house have come to have special meanings. For example, the kitchen is associated with the transformation of raw materials into food through the use of fire, and we can see this as a kind of alchemical process used to provide the nourishment essential to life, as well as the pleasure of eating food that has been cooked. In this sense, houses symbolise the lives of their inhabitants. Illustrations of this relationship in stories are a common symbol.

Spirit of place or *genius loci* is a Roman concept, which indicates that every independent being has its *genius*, its guardian spirit. This spirit gives life to people and places and determines their character. In this sense, the spirit refers to what a thing is or what it wants to be (Norberg-Schulz, 1980). *Genius loci* is described by Norberg-Schulz as representing the sense people have of a place, understood as the sum of all physical as well as symbolic values in nature and the human environment. For instance, in ancient Egypt, as Norberg-Schulz (1980) points out, the structure of the landscape functioned as a model for the layout of the public buildings, which should give inhabitants a sense of security by symbolising an eternal environmental order. Further, Norberg-Schulz (1980) stressed that “place” means more than merely a location, as there exists a “spirit” which cannot be described by analytical and/or scientific methods. He proposed a phenomenological method in order to understand and describe the spirit of the place through a depiction of its physical features and an interpretation of the human experiences within that place.

According to the basic principles of the phenomenological methods used to investigate the “substance of being” and/or the “substance of existence”, Rifaioglu and Guchan (2008) define the spirit of place as the substance of place, the formation of the genetic order of place and its interrelations, which form the urban context, the origin of the place’s existence, and a dialectic link between the place and its inhabitants. Consequently, as they argue, the place is formed through time by its unique and distinctive character, and is the base of both a building and its users.

For others like Cullen (1961), Conzen (1966) and Sharp (1969), “spirit of place” is an elusive phenomenological concept. The conceptual approach to its meaning emphasises that it is created through history in a particular place in a town or a city, and requires an individual approach to conservation activities. Places have a coherent narrative that connects their past to their present and could guide their future (Brook, 2000).

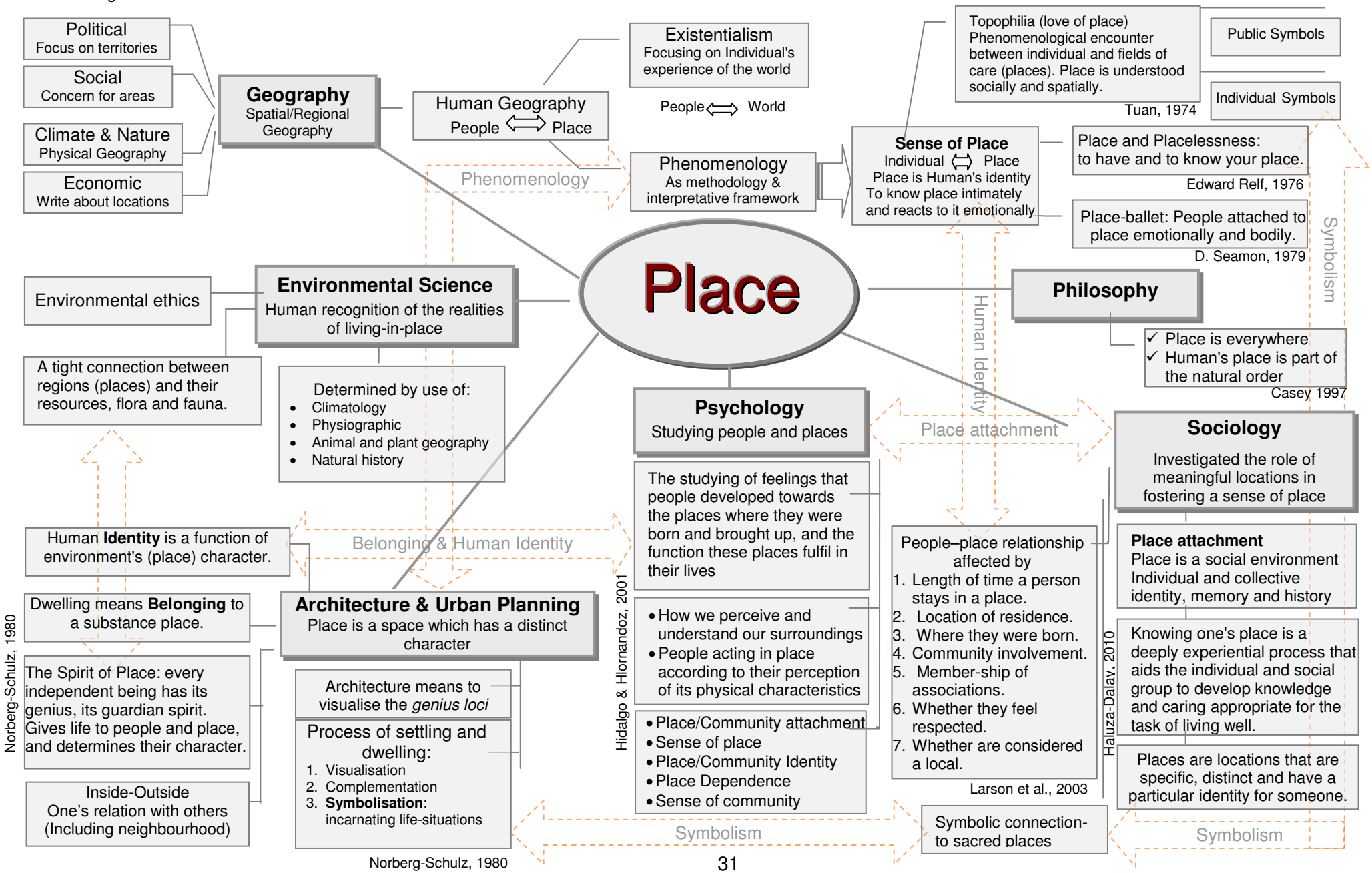
As for location, Rapoport (1969, pp.29–30) argues that the influence of a site is "cultural rather than physical", since the ideal site depends on the goals, ideals and values of people or period, and the choice of a good site “whether lake, river, mountain or cost depends on this cultural definition". Further, he adds that in Islamic countries, site selection occurs either because of "supernatural aspects or may depend partially on [the] political and social view point".

Finally, in environmental science, Sale (1985) argues that humans cannot dwell on a piece of land unless they understand the place, i.e. the kinds of soils and rocks, water sources, the different kinds of winds, plants and trees, cycles of the seasons, limitation of resources, in addition to the cultures of the people, and the personal, social and economic conditions.

The bioregional approach, as a branch of the environmental genre, is centred on the concept of inhabitants' recognition of how to live in a place (Cresswell, 2004). Others also point out that feelings of attachment and association to a place should be reflected in the form of greater effort to protect it (e.g. Sobel, 2003). In his study about environmental identity, Clayton (2003) emphasises the influence of nature on individuals’ identification as part of an attachment to a place. This gives an indication that individuals cannot develop an attachment to a place unless they do so with its environment; i.e. hazards that threaten the quality of the natural environment may also threaten the individual's attachment. Furthermore, individuals who are more attached to the natural aspects of their environments would be involved in more pro-environmental behaviour, i.e. actions that are intended to minimise environmental harm (Scannell and Gifford, 2010).

Within those huge disciplines, five main aspects of place are deduced for the purpose of this study: attachment, identity, symbolism, location and environment. To summarise the differentiation as well as interrelation among the various disciplines, and to what extent each one addresses the term ‘place’, see Figure 2.5, which summarises the foregoing on place.

Fig. 2.5: Place – the five main issues related to "Home"



2.2.3 House

A house is a physical structure where people can live and carry out their daily activities (Sudjic, 2009; Barley, 1963; Coolen, 2009). It is an “artifact which assembles elements into a physical object with a certain form” (Hiller and Hanson, 1984, p.1), where its main aim is to provide an environment that suits the lifestyle of the household; as Rapoport (1969, p.46) would term it, “a socio-cultural aspect”.

There are several types of houses including cottage (Downing, 1969); villa – detached and semi-detached (Breckon and Parker, 1991); terrace and row houses (Muthesius, 1982). A variety of factors can influence and modify the form of a house: climatic conditions, location, availability and selection of materials and construction techniques (Rapoport, 1969, p.47). The house’s threshold is associated with the solid need to define a private terrain. However, there are several ways in which it is defined, depending on two factors: "cultures and periods". Thus, the threshold occurs at different locations of a house. For instance, in Muslims' contemporary houses – represented by the villa style in Saudi Arabia – there is a great deal of containment, while in cultures like the British and American, it is more open at the front of the house (see Figure 2.6). In general, the threshold functions to satisfy the need for separation between different domains: public, semi-public, and private. Interestingly, in "hierarchical cultures" like Islam (see Figure 2.7), courtyard houses express the firm demand for the separation between semi-private, or semi-public, and private domains (Rapoport, 1969, pp.80–81). Some houses have more than one entrance – one for men and another for women – while in other houses, the entrances have different purposes: either to differentiate categories of people such as households and servants, or moods like formal and informal, or functions such as living and sleeping (Hanson, 1998).

Fig. 2.6: Contemporary house – separation between different domains among different cultures.

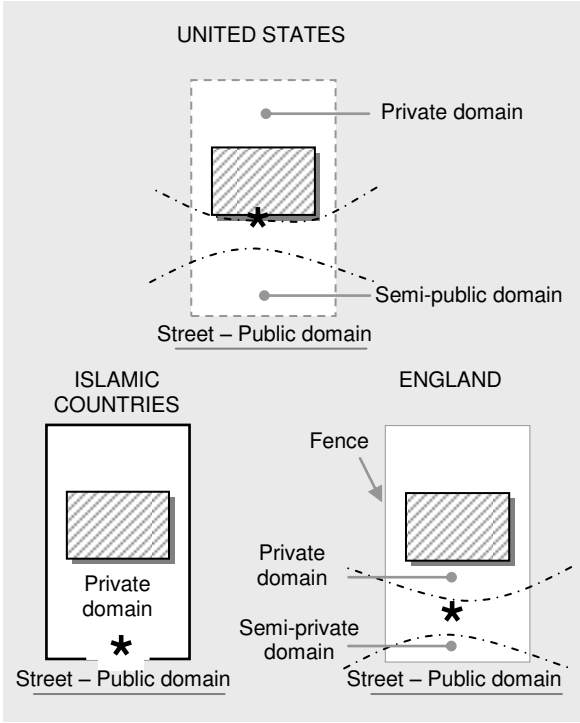
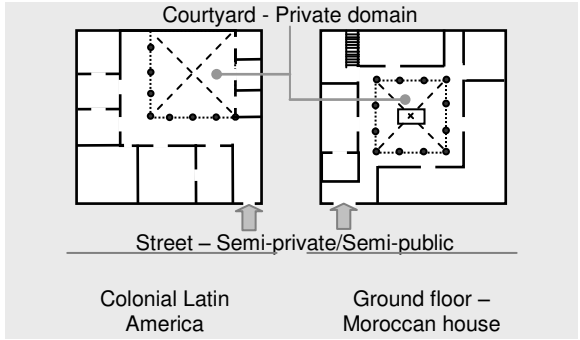


Fig. 2.7: Courtyard house – separation between different domains



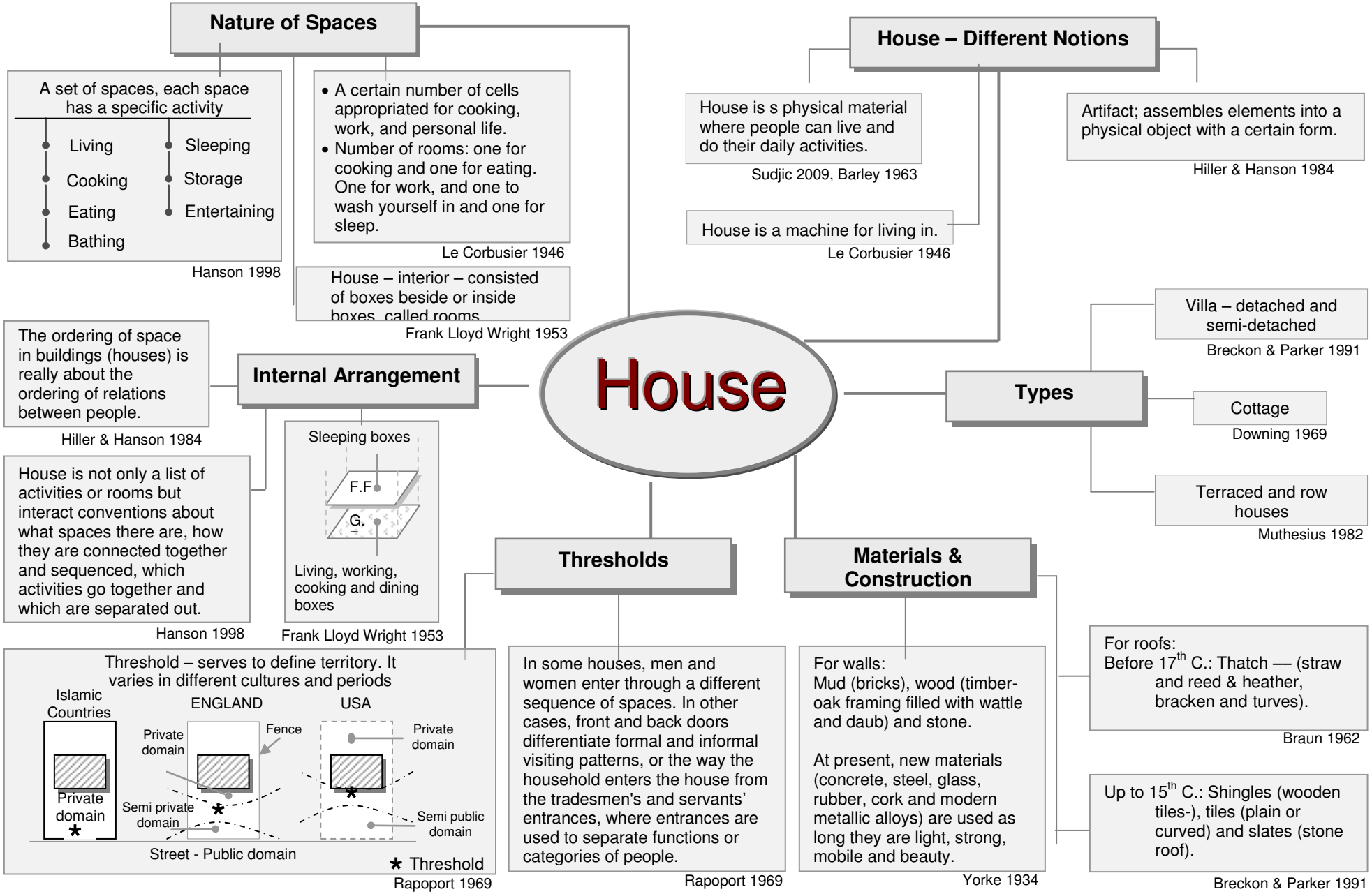
As an arrangement, building a house is not just a functional purpose; it is also a cultural phenomenon, where the form and arrangement of spaces reflect the culture of its occupants (Rapoport, 1969). Frank Lloyd Wright (1953, p.139) describes a house as “a number of boxes beside or inside boxes, called rooms”. Yet, a house is not just a set of rooms, but it is how those rooms are linked together and organised to permit activities to be collected together or separated (Hanson, 1998). Moreover, relationships between users, as inhabitants and visitors, constitute the main factor for ordering different spaces in the house (Hiller and Hanson, 1984). In this context, Wright (1953) states that sleeping rooms are normally on the upper floor for the purpose of privacy, whereas other boxes – kitchen, dining and living – are usually on the ground floor.

In terms of the nature of spaces, different lifestyles all over the world, support the same basic activities as “living, cooking and eating, entertaining, bathing, sleeping” (Hanson, 1998, p.2), “reading or receiving a formal caller” (Wright, 1953, p.139) as well as for working (Le Corbusier, 1946). A house consists of a certain number of spaces appropriated for "cooking, eating, working, bathing and sleeping" (Le Corbusier, 1946, p.23).

In terms of building materials, Yorke (1934) points out that until the early 19th century, buildings were very largely determined by local conditions. Timber served as the basis for most houses; however, by the end of the 12th century, houses were built with stone until the end of the 16th century, when brick became the essential material (Yorke, 1934; Cunnington, 1980). Walls were built using an oak frame filled with wattle and daub (Yorke, 1934) or with mud (Woodforde, 1969) in all countries. As for roofs, Breckon and Parker (1991) note that different materials were used for roofs such as thatch and reed or straw; tiles – plain or curved – or slates (stone roof); shingles – wooden tiles; and stones. In addition to that, clay reinforced with sticks or wattles were used as well for roofing (Braun, 1962). Thatching materials could be – in addition to straw and reed – heather, bracken, or turf. Thatch is laid upon a roof in order to keep out the rain (Braun, 1962). In terms of floors, timber joists or concrete were used (Penn, 1954). “At the present time [mid-20th century], we have arrived at a period of ingenious synthetic materials, the products of the chemist and the machine” (Yorke, 1934, p.12). He praises the new materials, namely: “concrete, steel, glass, rubber, cork, and modern metallic alloys, which neither rust nor oxidise” as light, strong, mobile, beautiful, of different colours and textures (p.12).

Within this aspect i.e. house, the following are the main issues that relevant to this study: types; threshold; internal arrangement; nature of spaces; and materials and construction (see Figure 2.8).

Fig. 2.8: House – notions and the five main issues related to "Home"



2.3 Home: the combination of human needs, place, and house

Rapoport (1969) emphasises the influence of human needs as the first factor in shaping the form of a home. The term "home" refers to a new entity derived from the concept of shelter, and plays its role in protecting humans against unwanted climatic conditions (Gardiner, 1975). It represents a shelter that has doors, windows and roofs, and is built of bricks or timber (Rykwert, 1991). Doyal and Gough (1991) confirm that a home constitutes one of the most important needs for its occupants only when it has the ability to protect them against climatic conditions.

Home expresses a sense of security and protection; it is a place of safety (Cristoforetti et al., 2011). Rykwert (1991) emphasises the role of a home as a source of security; therefore, he views a home as a castle. The forms of homes reflect safety, security and privacy issues (Eben-Saleh, 2001), which are generally regarded as central to the meaning of home. It represents and symbolises the escape from the external world to the internal one, from the public domain to the private one. Home gives a sense of security and safety (Cristoforetti et al., 2011, p.226). It is regarded as a place of privacy, where people can do whatever they want, being an environment free from outside interference (Holloway and Hubbard, 2001).

Despres (1991) argues that there are three main needs that should be fulfilled in a home: physical security and health, privacy, and social status. Various studies including Poyner (1983), Maguire (1982) and Woller (1978) emphasise the connection between the designs of a home in particular – as well as the built environment in general – and a sense of security; i.e. community layout and home design have more influence on the crime level than other factors such as genetics, child rearing and education. Schwartz (2009) shares this view, as he states that residents tend to use different kinds of environmental barriers such as walls, doors and windows in order to create a separation between the private and public domains.

Rapoport (1969) asserts that the need for privacy is one of the basic needs with a significant contribution to the creation of the built environment for some societies; e.g. the courtyard house expresses a strict need for privacy protection in some cultures where openings face the courtyard. Nevertheless, Rapoport (1969) adds that privacy has no fixed definition among different cultures; thus, achievement of privacy has different forms related to the separation of domains, through which it affects the form of the home.

As a source of status, Rapoport (1969) stresses that individuals' desire to build a home to express their status has more effect than other factors – such as the

climate – on shaping their homes. To interact with a new community, individuals tend to use their homes in terms of the decoration and furniture arrangements to display their social status (Bernard, Bonnes and Giuliani, 1993, cited in Al-Naim, 2006, p.115). In this connection, Despres (1991) sees home as a tool that should fulfil three main needs: security, privacy and social status. People tend to express themselves in their built environment (Al-Naim, 2006).

Home decoration and furniture arrangement play a major role in expressing social status (Bernarad, Bonnes and Giuliani, 1993). Sudjic (2009, p.6) emphasises this role as he says: "Our house is a reflection of the way that we see ourselves, or perhaps more accurately, of how we would like ourselves to be seen." As for aesthetic, the external appearance, particularly in residential architecture, is defined as an action to improve the appearance of a physical environment such as painting a house (Kowaltowski, 1998).

Emotionally, homes refer to the feelings generated between the person and his places of residence past and present (Marcus, 1996). Compared to the house, Rowles and Chaudhury (2005, p.226) argue that a home is for the soul, but a house is where people live, and they describe the home as a symbol created by the people who live in it. Home "acts as a focus of the person's activities, memories and experiences, indeed their sense of identity" (Sixsmith, 1986). Place helps in symbolising the life experiences of its users; i.e. home symbolises the life experiences of the family who lived in it over a specific period (Norberg-Schulz, 1980).

It is common that a home provides shelter and comfort for occupants; however, its primary role is to express “who we are, and who we are not” (Sudjic, 2009, p.6). Home is that place where a person can find his identity (Norberg-Schulz, 1980). Home is defined as a "symbol of one's self"; thus it represents the symbol of social identity (Despres, 1991).

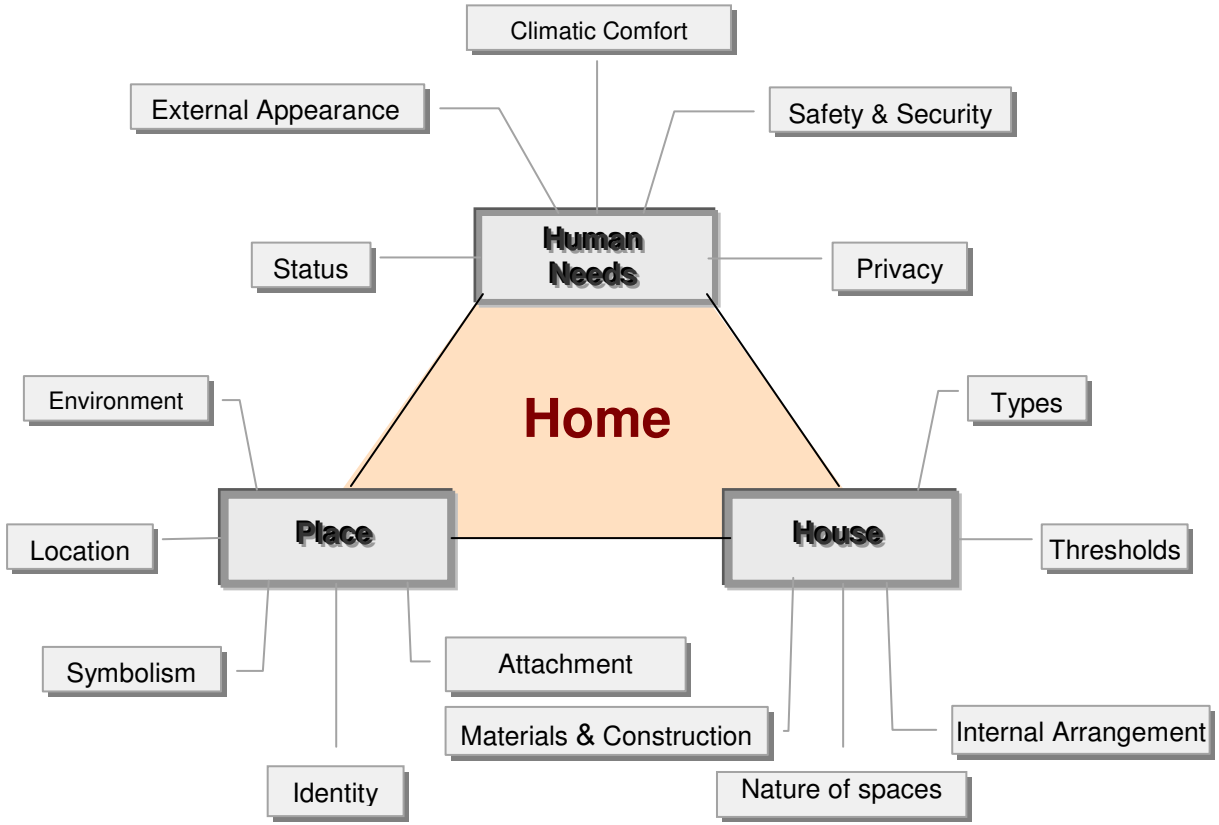
“Home is not a housing machine, but instead a complicated fabric of symbols, dreams, ideas and aspirations” (Lantz, 1996, p.32*).* It reflects a better understanding of the relationship between place meanings and values that individuals assign to the natural environment (Bott et al., 2003). For Frank Lloyd Wright (1953, p.130), a home – as a building – “should be an elemental, sympathetic feature of the ground, complementary to its nature-environment, belonging by kinship to the terrain”. In this sense, Norberg-Schulz (1980, p.18) states that: "The purpose of building is to make a site become a place, that is, to uncover the meanings potentially present in the given environment." “*Dwelling*” means belonging to a substantive place, i.e. a human being dwells where s/he can experience the environment as meaningful, by considering

its characteristics related to the earth and sky (Norberg-Schulz, 1980).

The home environment, according to Rapoport (1985), can be understood as "that system of settings within which a particular set of activities takes place". Rowles and Chaudhury (2005, p.226) identify home as a matrix of places and relationships, objects and emotions, which includes and completes a person's self-image and sense of identity, understood as expression, identification, belonging, power and appropriation.

To conclude, three main principles and 15 aspects, five of each, as shown in Figure 2.9, have been identified as relevant to home. According to this interdependence between the three principles of Home, Islamic culture's relationship with each principle will be investigated, then, types of houses in the central region will be evaluated through those principles to determine the compatibility between them.

Fig. 2.9: Home – the fundamental principles



Home and the influence of culture

Chapter 3: **Home and the influence of Islamic culture**

The religious Islamic culture is very distinctive, but it covers a massive area of territory. Siddiqi (2014) states that Islamic culture has varieties and rich diversity; there are elements in Islamic culture that are constant and that are universally accepted by all Muslims. However, there are also elements in Islamic culture that are diverse and different from country to country and people to people. The universals are based on the Qur'an and *Sunnah*, while the variables are based on local customs (*a'raf and 'adat*) of various people. Thus there is an Arab Islamic culture, an Indo-Pakistani Islamic culture, an African Islamic culture, a Chinese Islamic culture, and so there can be an American or western Islamic culture.

This part of the study will analyse the extent to which Islamic culture has influenced home in terms of three key principles of the home – human needs, place and house. The introduction will clarify how Islamic culture affects the entirety of Islamic life, including the built environment, of which the home is an integral part.

3.1 Introduction: Islamic culture and the built environment

The Qur'an and *Sunnah* – (the *Sunnah* of the Prophet Mohammed includes his specific words, habits, practices, and silent approvals) – are the prime resources for legislation and belief, and they constitute the framework and approach that produce the concepts and principles of Islamic culture. In addition, they identify the basic content of the Islamic community's architecture (Ibrahim, 2004).

Islamic culture has had a deep influence on all architectural designs among the communities in the central region throughout history (Al-Nowiser, 1985). It has also had a profound impact on all aspects of Saudi life. As a result, the built environment is shaped to meet the requirements of this culture (Eben-Saleh, 1996). Hence, Soud et al. (2010) state that Islamic cities, including houses, visualise the prime principles of this culture. Thus, it is not just a culture; it is a way of life (Soud et al., 2010; Khalid, 2002).

In this context, Omer (2010) points out that Islamic teachings form the ways that Saudis, as Muslims, conceive and use their built environment in general, and their houses in particular. They have a significant influence on forming human relationships, strengthening the social fabric, spreading unity, and deepening the psychological assets of social interaction, such as cooperation, compassion and good

neighbourliness. For this reason, the built environment must conform to Islamic culture (Azab, 1997).

Islamic culture underpins the Islamic content of domestic architecture, which reflects the functional requirements alongside the human and social requirements related to Islamic values and teachings that must be reflected in all buildings, including houses. Such content constitutes the main approach to the perspective of Islamic architecture, completed with fine characteristics derived from the natural environment and cultural heritage of the particular place (Ibrahim, 1996). Consequently, Ibrahim (2004) asserts that the Islamic content represents the constant character in the Islamic perspective of architecture, which does not change according to location or time, and therefore it acquires a global character. However, it is variable and has a local character; for instance, maintaining the privacy of inhabitants is one of the most important values of Islam, which is common throughout Islamic cities, but may vary in terms of the means used to achieve this need.

On the basis of the Qur'an (14:37 and 11:61), Ismail (2004) assumes, from Islamic teachings and values, that there are three types of relationships: the relationship of man to his Lord (God Almighty), to himself and to his society. Therefore, the architecture of houses in particular is a reflection of those relationships which summarises the presence of humans on earth (Ismail, 2004). He also emphasises the Qur'an's definition of human urbanisation as housing in a particular place for a particular purpose, evolving over time to become human gathering, having a peaceful life.

Islamic law, which is derived from the Qur'an and Sunnah, is concerned with the organisation of all aspects of life, as well as identifying behavioural rules of conduct. This is because it works on linking the urban fabric with the social structure, as well as providing a reference to determine the relationship between social, cultural and environmental factors (Abu-Ghazzeh, 1994). Therefore, Azab (1997) states that Muslim judges deduce building laws from a set of Qur'an verses such as 7:199, and as for the Sunnah, the Prophet said, "do no harm" (*la-dharar-wala-dhirar*), meaning no person or group should be harmed for the benefit of another.

This constitutes a basis for the jurisprudence of Islamic architecture, which produced several laws that influence the development process of architecture in Islamic cities. Furthermore, Azab (1997) notes that every Muslim should have the knowledge of these building laws, and implement them automatically without the need for monitoring by authorities.

3.2 The notion of house and home

The notion of '*House*' is mentioned in the Qur'an several times with different designations such as: '*bayt*', '*dar*', '*manzil*' and '*maskan*' (Nawfal, 2011). Omer (2010) points out that '*House*' and '*Home*' are mentioned in different verses with different names in the Qur'an. In verse 16:80, God Almighty (Allah) uses the term '*bayt*' to mean shelter, which is derived from an Arabic verb '*bata*' that means to spend or pass the night. Furthermore, in another verse, God Almighty mentions humans' need for shelter by using another term, '*maskan*', which is derived from the verb '*sakan*'; when the night arrives, humans hasten to withdraw to their shelter to have rest and seek refuge from the threats associated with the night (Omer, 2010).

However, others like Al-Naim (2005) differentiate between the terms '*bayt*' and '*maskan*'; '*bayt*' constitutes the physical domain for housing, while '*maskan*' is the humanitarian domain for housing. To become a *maskan*, there must be an emotional connection between a *bayt* (a house) and its occupants.

For this reason, Al-Naim (2005) predicates that the term '*bayt*' corresponds to the term '*House*' in western culture, while the term '*maskan*' matches up with the term '*Home*'.

3.3 Islamic culture and human needs

Islamic culture is able to accommodate all aspects of life, including the human needs for health, education and housing (Azab, 1997). It constitutes the essential source for spiritual and moral needs, as well as regulating the subsistence needs of society and balancing them with behavioural values and lifestyle (Ibrahim, 1996a). This part of the study will be limited to the human needs relevant to "home" which are covered by Islamic culture – the Qur'an and Sunnah.

3.3.1 Shelter – climatic comfort

The Qur'an (16:80) highlights humans' need for a shelter as a place to calm down, to repose, to rest, to become quiet and tranquil, to feel at ease (Omer, 2010). Furthermore, in the Qur'an (16:81), Allah says:

> And Allah has made for you, from that which He has created shadows and has made for you from the mountains, *Acnana* (shelters), and has made for you garments which protect you from the heat ….

God Almighty emphasises a human's need to protect himself against undesirable climatic conditions, pointing to the importance of homes, trees and clouds to provide shade, which works to protect people against the sun's heat and its harmful rays. Furthermore, God Almighty points to a human's need for an adequate place (shelter) to protect him from rain and winds, using the word '*Acnana*', referring to the caves in the mountains (Al-Qurtubi, 2006).

In this view, the Prophet Mohammed (peace be upon him (pbuh)) says: a human being has the right to these qualities: a shelter (*bayt*) to live in, clothes to cover his body, a loaf of bread and water (Al-Tirmidhi, 1996). Ibn-gaim (1992) outlines the characteristics of the homes of the Prophet (pbuh) and his companions in terms of the ability to meet their needs for protection against heat and cold and shielding against harmful winds and storms. A home should satisfy human needs, including protection from harmful climatic conditions, e.g. very hot or very cold temperatures, the sun's harmful rays, as well as winds and rain (Omer, 2010).

Furthermore, in terms of the need for natural light and ventilation, Al-Kattani (1927) points out that when the Prophet Mohammed (pbuh) built his house next to the mosque, he was keen to introduce doors and windows to facilitate the movement of air inside it, to reduce the air temperature as it was very hot and dry, and to prevent unpleasant smells. In this context, Hammosh (2002) notes the opinion of Muslim judges as to whether a neighbour has the right to raise his house as it may result in blocking natural light and ventilation. They said that it is better not to allow him to do so because it is a form of harm to his neighbours, who have the right to have natural light and ventilation, as these elements are necessary to provide a healthy environment for every human being. Based on the physical and psychological make-up of people, Al-Osaimy (no date) concludes that the basic needs for humans are multiple, and he mentioned food, drink, clothing, shelter, and medicine.

As Ali (2007) notes, the Muslim world, and especially the Arab world, is characterised by a harsh climate – hot and dry – and little rain, in addition to heat-winds laden with sand, as well as an increase in the intensity of solar radiation. In response to these extreme climatic conditions, and in order to meet the residents' need for protection against such severe climatic conditions, human life tends to be oriented towards the interior, both in the built environment in general and in homes in particular. Internalised life in Islamic cities is represented by two aspects: first, city planning is characterised by a compact urban pattern, narrow and hierarchical alleys passing from public to private until reaching a cul-de-sac (a semi-private court), which contributes significantly to the provision of shade and shadows for city alleys and homes, as well as controlling the speed of the winds and reducing the heat in the air (see Figure 3.1). Second, residential buildings, which are generally oriented towards the interior (depending on the provision of a courtyard) (see Figure 3.2), serve to provide shade and regulate the temperature in line with the residents' needs (Ibrahim, 1996; Ali, 2007; Okasha, 1994). Directing streets and alleys from north to south contributes to the flow of cooler air, and because of the winding

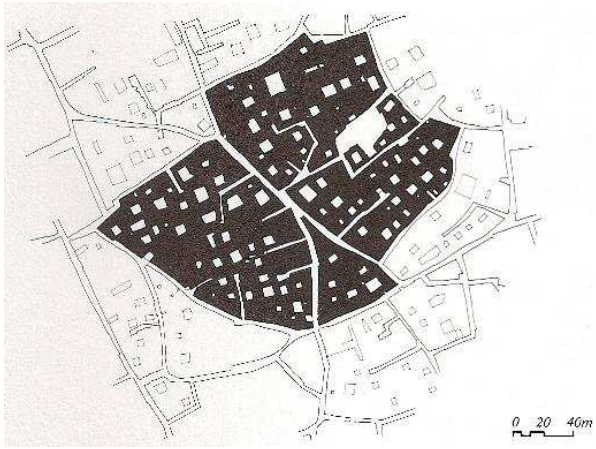
streets and alleys, the air travels into the courtyard of the houses causing the expulsion of hot air during the day. Furthermore, houses are grouped to form one block, while exterior openings are narrow and few, if any (Ali, 2007) to minimise heat penetration to inside the house.

3.3.2 Safety and security

Islam has guaranteed the achievement of safety and security within the Muslim community on the basis of the Qur'anic verses that prohibit assault on life, honour, and money. In the Qur'an (16:90), Allah says: "Indeed, Allah orders justice, good conduct, giving to relatives, and forbids immorality and bad conduct as well as oppression". "[As for] the thief, male and female, amputate their hands in recompense for what they committed as a deterrent from Allah" (5:38). "And do not kill the soul which Allah has forbidden, except by right" (17:33). Also in the Sunnah, the Prophet (pbuh) encourages Muslims to treat one another as brothers: "whoever seeks to do harm to his neighbour does not believe in Allah, whoever does harm to his neighbour does not enter Paradise" (Al-Nisabory, 1998). Ali (2007) predicates that the compacted urban patterns, narrow and winding alleys, as well as the limited number of openings, help greatly in providing safety and security to the residents of the Islamic city.

In terms of security and safety in Muslims' homes, Allah says in the Qur'an (15:82): "And they used to make from the mountains homes for feeling secure and safe". Ismail (2004) presumes from this verse that Allah emphasises the need for safety and security in the home. Furthermore, Omer (2010) asserts that a home does not just imply a place where a person can have refuge overnight; rather, it implies a place where people can take refuge at any time from all the hazards and threats of the outside world.

Fig. 3.1: Compact urban pattern, narrow and hierarchal alleys – Tunis, 1968



(Source: Akbar, 1988)

Fig. 3.2: Houses are oriented towards the courtyards

(Source: Ragette, 2003)

In this context, the Prophet Mohammed (pbuh) says:

> Whoever among you is safe and secure in his home, healthy in his body, has his daily bread, is as if the entire world has been given to him (Al-Tirmidhi, 1996)

which illustrates the importance of safety and security as an essential need in a place of dwelling.

Based on the Qur'an and Sunnah, Omer (2010) declares that a home affords Muslims the need for security and safety, functioning as their shelter and safest haven on earth. As Omer (2010) notes, Islam teaches that not the slightest harm to anybody and anything under any circumstances may be inflicted. In this context, Ibrahim (2004) points out that the essential contents of the Islamic community's architecture are based on preserving the family and society, caring for the rights of the neighbour, and doing others no harm. Therefore, Islamic culture contributes to the consolidation of the concepts of safety and security among individuals within the Muslim community. Ibn-gaim (1985) summarises the needs that every home was to meet at the time of the Prophet and his companions, which include the need for safety and security against harmful animals and biting insects.

3.3.3 Privacy

Based on several verses in the Qur'an, such as "Say to the believing men that they should lower their gaze …" (24:30); "O you, who believe, enter not houses other than your own houses, until you have asked permission …" (24:27–28), Omer (2010) points out the extreme need for privacy, and states that the house design must promote the protection of household privacy. Nawfal (2011) interprets the first verse in terms of the human need for privacy to preserve the family. As in the second verse, seeking permission from the household before entering their house is an essential requirement in Islamic culture and virtually every culture, in order to provide privacy to the inhabitants (Ismail, 2004).

Islamic culture is constant in calling for a person to safeguard his privacy and that of his family; he is likewise required to respect the privacy of others (Omer, 2010, p.23). The Prophet Mohammed (pbuh) stresses the proper treatment of neighbours, referred to by the Qur'an in a number of verses. He says: "He whose neighbour is not safe from his misconduct shall not enter Paradise" (Al-Nisabory, 1998); and "He who believes in Allah and the Day of Judgment should not disturb his neighbour" (Al-Bukhari, 1986). Due to the fact that the privacy of the home is influenced by the position of the openings – doors and windows – as well as roofs in neighbouring homes and how they are oriented, scholars of Islam relied on the Sunnah of the Prophet (pbuh) – "do no harm" – not to allow those who wish to open a window in the wall of their home through which they could overlook their neighbour's house,

causing harm to his privacy, to do so (Al-Hathloul, 1981; Azab, 1997). Al-Hathloul (1981) adds that the importance of privacy in the Islamic city has been applied to the level of the mosques as mandatory, in order to respect the privacy of their neighbours, reiterating that one should rather be more careful of homes in the application of this need.

In an Islamic community, the home's privacy is highly respected, and no one is allowed to violate this need in any way; as a result, the house is oriented towards the inside and not towards the street and neighbours (Azab, 2008). The privacy of the family is a decisive element which affects the layout and the form of all traditional Muslim built environments to be clearly defined as either public, semi-public or private spaces. The cultural emphasis on visual privacy in Islamic communities has also tended to produce an inward-looking plan; courtyards, with plain external walls, and no openings in most houses (El-Shorbagy, 2010).

In this view, Nawfal (2011) classifies the privacy of the home as a significant principle that has various forms: visual, auditory, living and motional privacy. Further, he explains the meaning of visual privacy as protecting a household against neighbours' and guests' prying eyes; auditory privacy is intended to preserve family secrets within the house; living privacy is the separation between boys' and girls' rooms, as well as that between children's rooms and the parents' room; motional privacy is the separation of reception rooms for male guests from those for female guests, in addition to the separation between the guests' reception area and the family bedrooms and living spaces. In contrast to other cultures, this principle of privacy protection is dealt with in courts of law to decide on the issues of disagreement between neighbours in matters of house building, as an open window looking towards the neighbour may affect his privacy.

3.3.4 Status

Extensive decoration of houses, as well as increasing the height of ceilings, was unusual at the time of the Prophet Mohammed and his companions (Ibn-gaim, 1992). Following Ibn-gaim (1992), Ibrahim (1996b) adds that Islamic culture encourages Muslims not to increase the height of the ceiling in the home, as it reflects a sort of boasting and showing-off, which is unwanted in Islam. However, Ibn-gaim (1992) notes that the Prophet Mohammed (pbuh) praises the spacious house, which he considers a source of a man's happiness. Accordingly, Ibn-gaim (1992) derives that the expansion of a house is desirable, but without extravagance or waste.

The facades of houses in the Islamic city are characterised by simplicity and limitation of openings and heights that suit

the width of the street or alley, and tend to preserve a spirit of equality and harmony in the exterior, which, in turn, reflect Islamic values and teachings that call for interdependence and social harmony.

According to Al-Mu'tasim (1980), Islamic society frowns upon the excessive and extravagant in building houses. The Prophet's companions' houses were just a few rooms, no different from the houses of other Muslims. However, this principle did not last long. With the beginning of the Umayyad era (661 AD), where life began to be affected by the Roman style on the one hand and the Persian style in the Abbasid period on the other, this led to the emergence of aspects of luxury and extravagance in the lives of rulers, where luxurious palaces began to be decorated with marble and gold (Al-Mu'tasim, 1980; Ibrahim, 2004a).

3.3.5 External appearance

Nawfal (2011) states that Islamic culture does not encourage being extravagant in the building of houses, but he stresses, according to the Sunnah of the Prophet Mohammed, that Islamic culture calls for the need for aesthetics in houses, internally as well as externally. Ibrahim (2004) states that Muslims' interest in the aesthetic aspect of their houses is clearly evident in the internal spaces, which revealed a wealth of architectural details and diversity of interior decorations, composed of simple architectural expressions in the external elevations. However, he also stresses a contrast to this phenomenon, in that it varied from one house to another depending on the economic situation of the homeowner.

3.4 Islamic culture and place

In this part of the study, the term "place" is analysed from the perspective of Islamic culture through its various aspects: attachment, identity, symbolism, location and environment.

3.4.1 Attachment

From an attachment perspective, sacred places play an essential role in the development of the attachment between a society and specific locations. For example, Muslims are required to go on pilgrimage to Mecca – as Allah says in the Qur'an (3:97) – once in a lifetime (only those who are physically and financially able do so). Therefore, Islamic culture constitutes a key element in the development of a sense of attachment to this sacred place – Mecca. Furthermore, the influence of Islamic culture includes the attachment to a sacred object such as "Al-Kaaba" (the black cube structure in the centre of the Holy Mosque) which reflects a public symbol of Islamic society (Wheatley, 2001). Verse 3:137 in the Qur'an demonstrates the influence of place in the expression of the identity and history of some societies (Al-Qurtubi, 2006).

3.4.2 Identity

In the Qur'an (16:80), God Almighty uses the home as an example to express the relationship developed by family members, explaining the importance of the home as a source of comfort, tranquillity and serenity; a place that brings together family members and strengthens the links between them, and where all daily activities occur, which over time become memories to which family members develop an emotional attachment within this place (Omer, 2010).

Based on the Qur'an (28:58), God Almighty says:

> And how many a city have We [God Almighty] destroyed that was insolent in its [way of] living, and those are their dwellings which have not been inhabited after them except briefly.

Omer (2010) points out that a house is a symbol of man's status on earth; i.e. it reflects a person's identity. Further, he adds: "People's houses stand for their very identity and the identity of their culture" (Omer, 2010, p.11).

3.4.3 Symbolism

Every place has a distinct character, and mankind should visualise place characteristics (*genius loci*) and then turn it into the appropriate form that meets the needs of living. In the Qur'an (2:30), God Almighty says: "And it is He who spread the earth and placed therein firmly set mountains and rivers …", and He also says:

> And He has subjected to you whatever is in the heavens and whatever is on the earth – all from Him. Indeed in that are signs for a people who give thought (45:13).

God Almighty encourages human beings to think about the soul of nature (place) as well as the surrounding atmosphere, to recognise its characteristics and use them in his benefits (Al-Qurtubi, 2006). Dealing with the harsh climate in the Islamic city means the integration of city planning and the design of houses together; thus, urban characteristics vary depending on different times and places, so that every place has its climatic and topographic characteristics that are reflected in the architecture of a city (Ibrahim, 1996a).

Many of those interested in Islamic architecture such as Ibrahim (1996), Ali (2007), Soud et al. (2010) and Okasha (1994) believe that the idea of using the courtyard has emerged in response to climatic conditions. The courtyard is deemed to be one of the architectural elements that have contributed to tackling the problems of the local environment successfully, as it functions as a regulator for the temperature inside the building by day and night. Azab (1997) predicates that the Islamic culture is the reason for the courtyard system, which works to link the human being with his Creator through enabling him to look at the sky, as it opens up a window for him to think about the universe and planets. The courtyard provides the inhabitants of the house with a

direct contact with the external environment, where all openings for light and ventilation are oriented towards this space (Soud et al., 2010). Topography varies from place to place, so that the nature of the land has its impact not only on the shape of the city, road networks and alleys that are in line with the topography, but is also reflected in the architectural expression of local building form (Ibrahim, 1996a).

3.4.4 Location

As a meaningful location, place has three fundamental aspects: location, locale and the relation between humankind and the surrounding world. Regarding “location and locale”, in the Qur'an, Allah says: "when We [God Almighty] designated for Abraham the place of the House" (22:26); and Abraham says, "Our Lord, I have settled some of my descendants in an uncultivated valley near Your sacred House" (14:37). “Place”, in the first verse above, is specified in terms of the location of the house (the Holy Mosque in Mecca), whereas in the second one, it (uncultivated valley) reflects the physical setting (locale) of a specific location (valley). Moreover, the term “place” has also been used to refer to different regions (locations); Allah says (16:112):

> And Allah [God Almighty] presents an example: a city which was safe and secure, its provision coming to it in abundance from every place (Ismail, 2004).

In terms of the relation between humankind and the world, God Almighty explained this relationship as more than just emotional attachment; Allah says in the Qur'an (2:30) that human will be his custodian on earth, which implies holding a position of power, trust and responsibility that is exercised in harmony with the will of the principal party (Kamali, 2010).

3.4.5 Environment

In the Qur'an (2:30), God Almighty says:

> And it is He (God) who spread the earth and placed therein firmly set mountains and rivers; and from all of the fruits He made therein two mates; He causes the night to cover the day. Indeed in that are signs for a people who give thought.

God Almighty encourages human beings to think about the soul of nature (place) as well as the surrounding atmosphere, to recognise its characteristics: the earth, mountains and rivers, in the sense of its topography; night and day, in the sense of dark and light by which people can deal with nature (place) (Al-Qurtubi, 2006). Therefore, to select an appropriate location for the establishment of an Islamic city, this requires consulting specialists in aspects of health, agriculture and irrigation, who would normally recommend places near fresh water sources, like rivers (Ali, 2007).

God's caliph on earth is complemented by that of being servant towards God Almighty, which indicates that man must nurture and care for nature (Kamali, 2010). In this context, the Prophet (pbuh) emphasises

this relation between mankind and nature (place), as he says: “the world is green and pleasant and God has put it under your charge to see how you will manage” (Al-Tabrizi, 1979, cited in Kamali. 2010). Moreover, he encourages mankind to contribute towards the development of land in order to own it: “one who reclaims barren land is entitled to own it” (Al-Sijistani, 1984). This resulted in the formation of the love affair between man and earth (place). Accordingly, human beings, individually and collectively, have the mission and responsibility to build the earth and tackle its resources with moderation and to care for its ecological balance (Kamali, 2010). Omer (2010) asserts that the human, as God’s caliph on earth, means that he must coexist peacefully with all animate and inanimate beings with which he shares the earth. Further, he states that every element, every portion of the earth and the entire universe, has a purpose on earth as much as humankind does, thus: "The relationship between man and the surrounding flora and fauna is to be reciprocal" (Omer, 2010, p.17).

The Prophet Mohammed (pbuh) established an essential legislative principle to conserve the natural resources and to prevent the razing of agricultural land, when he said: "Anyone who plants a tree or sows a field, and a human, bird or animal eats from it, it shall be reckoned as charity from him" (Al-Bukhari, 2008). Nawfal (2011) states that the Prophet (pbuh) had encouraged Muslims to preserve the environment against pollution by planting trees, cleaning rivers, drilling wells, and cleaning up roads.

> The whole creation, including man, constitutes a macro-web whose parts are nearly interwoven, drawing and depending on each other for their survival (Omer, 2010, p.16).

The cities in the central province of Saudi Arabia have been influenced by Islamic values and principles, which ensured that urban architecture is guided by a set of concepts dealing with the environment such as hygiene and respect for natural resources like water and fuel (Ali, 2007). In this sense, Omer (2010) predicates that man's house is an ecological object, and to build it up, man must borrow several natural ingredients and minerals, which are readily available in nature; thus, man should consider the environment as an ally or a partner. In short, human beings, individually and collectively, have had the mission and responsibility to build the earth and tackle its resources with moderation and to care for its ecological balance (Kamali, 2010).

3.5 Islamic Culture and House

The existence of a house – the physical object – is an inevitable requirement for the existence of a family, whose proper functioning depends mainly on the proper designing, building and functioning of the house (Omer, 2010). For this reason, he argues that:

> Building houses that would function as family development centres has always been seen by Muslims as an obligation [Arabic *wajib*] (Omer, 2010, p.5).

Further, Omer (2010) asserts that the ways in which houses are designed and built either encourage and assist their inhabitants in executing their tasks as Allah's vicegerents on earth, or hinder them while doing so. Based on the theoretical concept of this study, this part will analyse the object – the house – in terms of: types, thresholds, internal arrangement, nature of spaces, building materials and construction, as follows.

3.5.1 Types

God Almighty notes three house types in the Qur'an: palaces, homes and tents. For palaces and homes, God Almighty says:

> And remember when He made you successors after the *Aad* and settled you in the land, [and] you take for yourselves palaces from its plains and carve from the mountains, homes (7:74).

As for tents, God Almighty (Qur'an, 16:80) says:

> And made for you from the hides of the animals tents which you find light on your day of travel and your day of encampment.

3.5.2 Threshold

God Almighty says in the Qur'an (2:189):

> And it is not righteousness to enter houses from the back, but righteousness is [in] one who fears Allah. And enter houses from their doors.

Nawfal (2011) derived from this verse the importance of providing two entrances within the house, one for male guests, and one for family members or female guests, because that is required in order to ensure segregation between the different sexes.

3.5.3 Internal Arrangement

Based on the need for complete privacy from visitors and guests, Ismail (2004) advises that the hospitality and eating spaces must be close to the entrance of the house, while storage and comfort (family living and sleeping) spaces should be moved away from the entrance.

3.5.4 Nature of spaces

During the Prophet's time, houses in Medina were divided into several spaces. Each one had a specific function: bathroom, kitchen, bedroom, visitors' room, storage for food, weapons, firewood, other necessary items, and stables for some domestic animals (horses, donkeys or camels) which could be used for transportation as well as a source of sustenance (Omer, 2010). Ismail (2004) points out that activities within the house are summarised in the Qur'an as follows, as they support the basic relationship between an individual and God Almighty, and between a person and society: first, comfort – sleep and lying down – when the body needs to regain strength and activity. Second, eating, which requires an appropriate place, as indicated in the Qur'an (24:61); comfort and eating fall within the relationship of a person with

himself. Third, hospitality, as indicated in the Qur'an (12:31 and 15:51), is part of the Muslim's faith in his Lord, as was said by the Prophet (pbuh), and represents communication activity with the community. Fourth, saving (storage), so that being self-assured in food security, in terms of meeting the physical need for food, makes one capable of hospitality; i.e. both hospitality and saving fall within the relationship of man to society. Fifth, worship; as indicated in the Qur'an (10:87 and 33:34), home is a place to connect the human being with his Creator (especially for women, who are preferred by the Islamic culture to pray at home), a source of comfort and self-cleansing of human sins; this activity is the embodiment of the relationship of a person with his Lord.

> The house in Islam is a framework whose plan, spatial arrangements and form facilitate and further encourage the worship (*'ibadah*) practices of its users (Omer, 2010, p.51).

3.5.5 Materials and construction

In the Qur'an, there is a set of verses such as 17:49, 57:25 and 27:44 that point to certain building materials such as stone, mud, and wood (Ismail, 2004). The Prophet Mohammed built his houses of mud, with the roof of tamarisk's trunks and palm branches, while the internal partitions were built of palm leaves coated with mud (Nawfal, 2011). Ali (2007) illustrates the different building materials used in Islamic cities as follows: first, the mud, which is used as bricks of different sizes; second, red brick, which is used in some Islamic cities such as in Egypt, Iraq and Iran, helped by the fact that these cities are located on rivers that enable them to use the silt (clay) to produce the red bricks. Third, stone; this is used widely for its ability to prevent the infiltration of external heat into the house. Limestone was also used for the interior walls, which helped to keep in cold air during the day. Fourth, wood, which is used for building roofs and domes. Fifth, gypsum and lime, which is able to absorb moisture in the air, is used in coating walls in humid cities, in addition to its white colour, which works to reflect the sunlight and protects the walls from the rain.

3.6 Saudi Arabian Culture

The Saudi population is characterised by a high degree of cultural uniformity and by an equally high degree of social stratification (Metz, 1992). This part will focus on the culture of Saudi Arabia in general, and the central province in detail, in terms of the elements of place: attachment, identity, symbolism, location and environment (spirit of place).

3.6.1 Attachment

The relationship between people and a place is a set of feelings that are affected by the setting of that place (Cristoforetti et al., 2011). Culture of Saudi Arabia (2015)

demonstrates that the old cities were walled and had compact residential areas with mazes of narrow paths, parts of which were covered by the upper stories of houses. Most houses had inward-looking courtyards. Mosques were within easy walking distance from residences, and there was always a main central mosque, a major market area, and a principal seat of government that was usually part of a fort. However, the new cities and the transformed areas of old ones depend on the use of automobiles. They sprawl over large areas, have neighbourhoods separated by open spaces, and are linked by wide thoroughfares, freeways, and ring roads. People in both cities and smaller communities now live mainly in individual dwellings with exterior surrounding walls.

Similarities in the social use of domestic space transcended the categories of nomad, villager and urbanite, and continue today. The tents of nomads and the permanent houses of others were divided into sections for men and women, which also served as the family living quarters. Among the nomads, men set on carpets around a hearth outside the front of the tent to drink coffee and tea, and to eat. Women made similar use of the space set aside for their visiting in the tents. The same pattern of gender-segregated space continues to exist in the homes of sedentary people. The modern house often has separate entrances and separate reception areas or living rooms for each gender.

The tents and old houses usually housed extended families of three or more generations. Although nuclear family households are increasingly the norm, relatives continue to cluster together, and it is not uncommon for brothers to locate their dwellings on adjacent lots or inside a common compound (Culture of Saudi Arabia, 2015).

People have a deep association with the places where they were born and grew up, and where they live now (Relph, 1976). Mothers used to give birth at home, perhaps with the assistance of a midwife. Infants were cared for by their mothers, who carried them everywhere and nursed them. Intense family and kin-based socialisation at home is now mainly a memory. In addition to that, births take place at a hospital.

3.6.2 Identity

In Saudi society, place is defined as more than a geographical location; its identity is derived from its use and from the attached significance of positive or negative images (Al-Nowaiser, 1985). The Kingdom of Saudi Arabia occupies most of the Arabian peninsula, the original homeland of the Arab people and of Islam. Identities linked to the traditional ways of life of the Bedouin and of oasis-dwelling farmers remain in force even as economic changes have transformed or ended those ways of life. Regional and kin-based tribal and clan

identities are shared among Saudi Arabian citizens (Al-Dossry, 2012; Metz, 1992).

Arabic is the language of all Saudi Arabian citizens. Classical Arabic (*fusha*) in its Koranic, high literary and modern standard forms is used for prayers and religious rituals, poetry, lectures, speeches, broadcasts, written communications and other formal purposes. Conversationally, people use colloquial Arabic (*amiya*). There are many sub-dialects and internal variants. English is the main second language (Culture of Saudi Arabia, 2015).

Saudis men wear a long white "dress" (*thobe*), a loose, ankle-length robe made from fine white cotton (or heavier woollen material in winter), and either a white or red cover over the head, held in place by the *agal*, a black "rope" which was originally a camel tether (Figure 3.3). The *thobe* can be worn for all occasions, either social or business. An outer cloak, the *bisht*, is worn on formal occasions and can be very costly, with embroidery in gold thread at the edges and the material itself of the finest quality. The women's dress is a black one, worn outside the home (Figure 3.4), which covers the whole body and head (Saudi Arabia – Language, Culture, Customs and Etiquette, 2014). The traditional black over-garment (*abaya*) is ankle length with long sleeves and a high neckline, and the hair is covered. Most Saudi women are totally covered, including their face. This is meant to protect women from unwanted attention.

Saudis frown on clothes which reveal the shoulders, arms or legs, and any woman dressing provocatively will be regarded as being of "easy virtue" or perhaps even as a prostitute. However, in the home, when not entertaining close friends or relatives, women often adopt western dress, particularly younger women (Social Customs, 2015).

Fig. 3.3: Saudi men's dress

Fig. 3.4: Saudi women's dress

3.6.3 Symbolism

The spatial elements of the physical environment in the dwelling and within the urban form symbolise the major activities that occur in them (Al-Nowaiser, 1985). In Saudi Arabia, settlement patterns are usually directed toward Mecca, the holy city. All mosques in each settlement must face Mecca and most of the settlement buildings follow the same orientation. This expresses a sense of linkage to the central holy place to which other Moslems in the world are oriented. Thus, Saudi residents feel unselfconsciously connected to other Muslims in the world through the Holy Grand Mosque of Mecca.

3.6.4 Location

Saudi Arabia is bounded on the east by the Arabian (Persian) Gulf; on the west by the Red Sea; to the south and southeast by Yemen, Oman, the United Arab Emirates, and Qatar; and to the north and northeast by Jordan, Iraq, and Kuwait (Culture of Saudi Arabia, 2014). Riyadh is located in the central region in the Arabian Peninsula.

3.6.5 Environment

Saudi Arabia has a hot desert climate with high humidity on the coastal fringes. Rainfall is scarce except in the area of Asir, where it is sufficient for agriculture on terraced farms and upper slopes and alluvial planes. It has no rivers or permanent bodies of water other than artificial lakes and pools. Wadis, the dry beds of ancient rivers, sometimes flow with runoff from downpours and seep with underground water (Saudi Arabia – Language, Culture, Customs and Etiquette, 2014).

The Riyadh region is mainly desert and has few oases, and it used to be inhabited by many nomadic Bedouin tribes (Al-Dossry, 2012). It is the geographic centre and political and cultural core, and is a vast plateau that combines rocky and sandy areas with isolated mountains and valley systems. The region is bordered to the west by the regions of Hijaz and Asir along the Red Sea. A narrow coastal plane known as Tihama is predominant in the south, while a mountain chain with a steep western escarpment runs through these areas (Culture of Saudi Arabia, 2014).

3.7 Summary

Islamic culture focuses on highlighting the role of houses in providing for the needs of the inhabitants, such as protection from an undesirable climate, providing security, safety and privacy in its various forms: visual, auditory, living and motional. It emphasises the importance of respecting the privacy of the neighbourhood and avoiding harm in any way. This, in turn, reflects the role that is played by a house in the creation of a safe environment for its residents in particular and the community in general. The need for privacy in the Islamic culture is considered a human right and a

cultural principle which must be respected and not violated for any reason.

The issue of status is not deemed to be a human need in Islamic culture, which calls for equality among the members of the community. However, because of the economic growth in some Islamic societies in general and the central region of Saudi Arabia in particular, this has resulted in an increasing interest in the aspect of status as a desire to highlight individuals' status and to command more respect. This desire still exists to this day, and will be discussed later in the section of this study that focuses on the contemporary house in the central region of Saudi Arabia, in order to explain the reasons behind it. It should be noted that the individual seeking for status is not forbidden from doing so in the Islamic culture, as has been previously indicated by Ibn-gaim (1985).

From the perspective of the need for external appearance, Islamic culture has brought this out in the designing of the interior spaces of the home, while the exterior appearance did not receive great attention due to the principle of equality between members of the community, as outlined previously. However, interest in the external appearance has begun to emerge recently with economic growth in Saudi Arabia, and will be further discussed in the next sections of this study.

The Islamic culture emphasises the role of the home as a social place whereby the emotional attachment between family members is forged, which in turn creates a link between the individual and a particular place with memories of it accumulated over a specific time period. The impact of Islamic culture in shaping the relationship of human–place was prominent in the form of being assigned rights to become a caliph to the Creator, summarised in the trust placed by the Creator in the creature to take care of the universe and maintain its sources and resources. Such a concern will ensure creation's survival for the benefit of future generations. It may be deduced from this, then, that the concern for natural resources and rational dealing with the properties and riches of this universe is assigned from Allah, which should therefore be obeyed by humankind. The influence of Islamic culture concerns various aspects of the house including internal spaces such as sleeping, eating and reception, and their relationships to one another. Furthermore, the impact of this culture has emerged in the division of the house into two domains (semi-private and private), which are in line with the need for privacy being a religious requirement. The semi-private domain is mainly for guests and visitors, which is also divided into two parts, men and women. The private section is meant for family members only, and includes the bedrooms, living room, kitchen, and toilets. Moreover, this tradition is also reflected in the need to provide two entrances to the house, one for male guests and another for female guests.

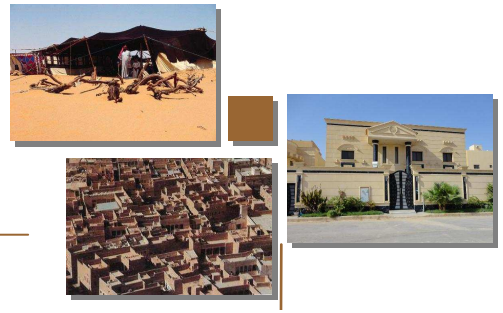
On the other hand, hospitality is deemed to be a cultural principle, stated in the Qur'an and Sunnah, which should be respected as a way of interaction with visitors and neighbours as well as relatives. In terms of building materials, Islamic culture encourages residents to respect nature through the use of local and natural materials for building their houses.

In general, Islamic culture, through its teachings and values, constitutes a guided tool for the built environment in general and for a house in particular. It contributes to determining the relations between the inhabitants and strengthens the deployment of equality and deepens the meanings of love and cooperation, and good neighbourly relations, which in turn have a significant impact in providing for privacy needs and dissemination of safety and security among the residents. It also calls for respect for the environment and not to damage it in any way or for any reason.

Saudi Arabia has a distinctive culture, which is influenced by its geographical location, the two holy mosques of Mecca and Madina, and the variation of climate. Despite that, the central province is affected by its location in the centre which is characterised by a hot desert climate, which has clear implications for the culture of this province and the urban form of the built environment.

To conclude, a people's religion influences their culture, and culture influences how they practice their religion, but in Islam there is a clear distinction between the two. Although Muslims from different countries share the same religion, they have dissimilar cultures; they eat diverse types of food and their style of clothing is different, and, of course, their languages are unlike; they have certain cultural and traditional practices that are not derived from the Islamic religion (Saidi, 2008). Therefore, it can be said that the elements of human needs and house are constant in Islamic culture. However, place elements are diverse from country to country.

Historical development of domestic accommodation in Saudi Arabia



Chapter 4:
Historical development of domestic accommodation in Saudi Arabia

Traditionally, “shelter” in the central region of Saudi Arabia was a response to cultural and climatic needs. However, the central province has two different types of shelter associated with the nature of its inhabitants; in urban settlements, people live in mud, stone and timber dwellings; while, in the desert, Bedouins (desert dwellers) live in tents which are easy to carry from one place to another on their camels (Talib, 1984).

Providing shelter and hospitality to their inhabitants, these goat-hair tents are the focus of Bedouin life, as well as an important part of Saudi culture (Saudi Embassy, 1998). Bedouins have roots going back hundreds of years, and still constitute as much as fifty per cent of the total Saudi population. They raise sheep, goats and camels. Camps are made up of extended families or tribes united under one leader, and each member has a role; thus, the camp functions as a self-contained unit (see Figures 4.1a, 4.2b). Women occupy a significant position in Bedouin society. They raise the children, herd the sheep, milk the animals, cook and make clothes, as well as weave the cloth that constitutes the tent. They spin the coarse, dark hair of the goat into fabric for tents on ground looms made from two strong pieces of wood staked into the earth. However, recently some nomadic herdsmen have become settled in villages after leaving the desert, and tend small farms and raise their livestock (Talib, 1984; Saudi Embassy, 1998). The three main types of shelters in the central province, the tent, courtyard and villa house, are analysed historically as follows.

Fig. 4.1a: Arabian Bedouins' Tent

Fig. 4.1b: Camp of Bedouins' tents

(Source: http://www.saudiembassy.net, 1998)

4.1 The Tent

Tents go back before the days of Abraham. Prophets like Abraham, Isaac and Jacob spent most of their life in tents, in and around the land of Canaan. The tent is rectangular in shape, and divided into two or three spaces by goat's hair curtains. The front space is reserved for male reception; beyond this is the space for women and children, while the third space, if there is one, is utilised for servants or cattle. To comply with the need for privacy, women, in the inner space, are screened from the view of those in the male reception area (Wight, 1953).

Further, Wight (1953) adds that there are two hearths; one inside the men's reception area, and another one outside the women's space, which is used for cooking – mainly in winter. The ground under the tent is covered by rugs; however, at night, bedding – composed of mats – is brought out for people to sleep on. Tents are grouped in a large circle, where the leader's tent is generally larger than the others (Wight, 1953).

Bedouins' tents, known as *beit sha'ar* (house of hair), are made of goat's hair, a coarse and heavy fabric. Their function is to protect occupants in winter from rainwater and cold winds. However, in summer, the sides of the tent are lifted and the roof serves as a sunshade (Wight, 1953).

4.1.1 Tents in Saudi Arabia

Tents, as noted by Talib (1984), are an expression of the pastoral-nomadic way of life which requires one to travel with one's shelter; thus, it should be light, flexible and easy to carry and erect. Further, he points out that the Black Tent of Arabia is also to be found in the south up to the Northern edge of the *Rub-al-khali* (the Empty Quarter – one of the largest deserts in the world). Talib (1984) and Saudi Embassy (1998) describe this tent in terms of its arrangement of spaces, the "urban fabric" of the settlement, and building materials and construction as follows.

The black tent is generally divided into two sections – one for males and one for females – using a cloth partition made of the same material as for the awnings. The women's section is generally longer than the men's, including a space for cooking and storage for bedding, baggage and food. If there is a newborn baby in the family, then a hammock may be hung in the women's section. Towards the outside, at the front of the women's section, there may be a place for a weaving loom and for water storage, mostly using leather bags.

The men's section is smaller and may contain mattresses for sleeping, a sitting area and riding gear. In the front of the men's section, guests gather around the hearth, which uses brushwood, charcoal or dried camel dung, where the host prepares

qahwa, the Arabic coffee, on the fire (see Figure 4.2a). This is the centre of the Bedouin's social life; coffee represents the generous hospitality of the host.

In terms of materials and construction, the tents' awning is woven made of goat's hair, camel hair, cotton or wool (generally black in colour). When weaving, loose stitches are employed to ensure good ventilation. The threads swell from rainwater, and then tighten, making the tent waterproof. The strips are later sewn together to form a roof and walls, which are resistant to wind and provide insulation from the sun and protection against the cold at night (see Figure 4.2b). The size of the tent depends on the importance of its owner, or the size of his family. It is supported by three longitudinal rows of slender wooden poles stuck in the ground (Rapoport, 1969), where the central row is higher than the others. However, the northern Arabian nomad's tent only has two rows of poles, placed at the front and the centre (see Figure 4.2c).

Fig. 4.2a: The tent: internal arrangement

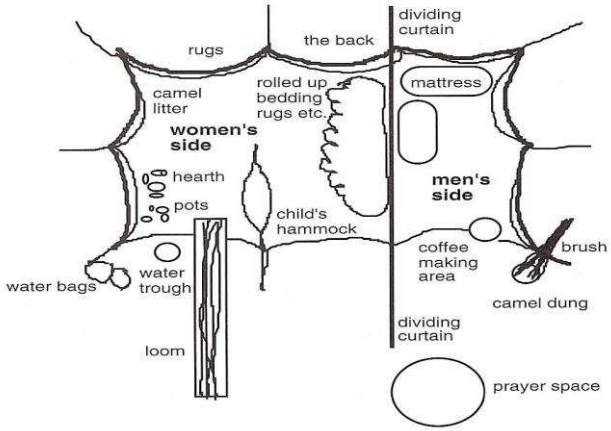
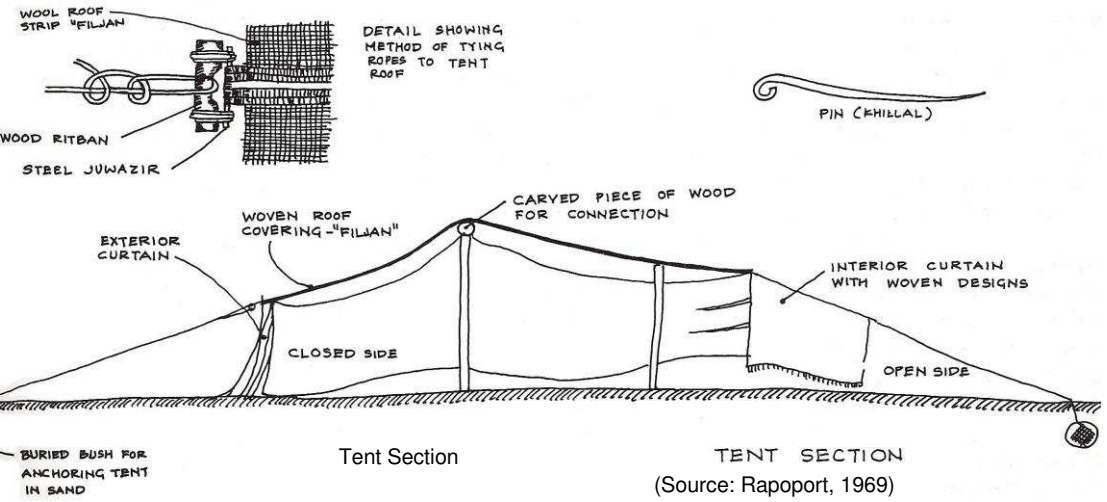
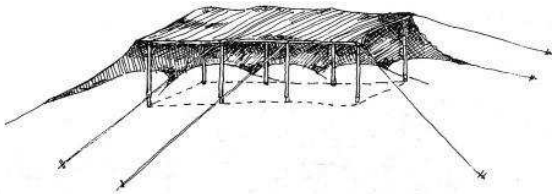


Fig. 4.2b: Tent section and materials

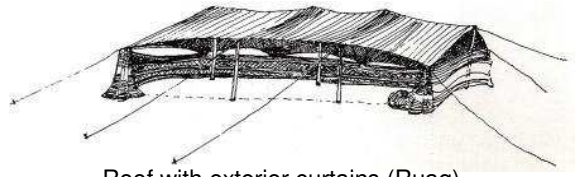


Tent Section

Fig. 4.2c: The tent: different methods of structure



Basic roof structure - two rows of four poles (Filjan)



Roof with exterior curtains (Ruaq)

(Source: Rapoport, 1969)

Furthermore, corresponding to each row of poles, there is a stake, used as an anchor point, to provide tensile strength against the desert wind. In addition, wooden pins and hemp ropes are used as fastenings.

4.1.2 Weekends in Desert Tents: Phenomena and Experience

According to Al-Sharrakh (2005), who conducted a series of interviews with different groups who like to go out during the weekend to the desert for different reasons (Figure 4.2d), for the spirit of place; one group enjoys the attractiveness of the desert's nature and diversity in terrain (Figure 4.2e), which is an important factor for wandering, exploration and climbing mountains. They also enjoy watching the beautiful scenery that is created at the moment of sunset on the sandy mountains, and capture souvenir pictures.

As for attachment, a group of young people state that they are keen on taking part in traditional games and various sports every weekend outside the city (Figure 4.2f). Another group has a herd of camels (Figure 4.2g); they prefer to spend the weekend in the desert in order to drink milk either after boiling it with the addition of cardamom, or just directly drinking it without boiling, whereas some of them are keen on preparing Arabic coffee in the traditional way.

Fig. 4.2d: Groups of people camping in the desert

Fig. 4.2e: Sandy mountains – diversity in terrain

Fig. 4.2f: Climbing the sandy mountains using bikes and cars

Fig. 4.2g: Enjoying drinking camel milk

For Identity, a further group emphasise their desire to practice the simple life – the life of the Bedouins – by trying to adapt to the limited possibilities offered by nature, with reliance on livestock to provide adequate food, as well as dispensing with the use of electricity in daily life and replacing it with natural and renewable materials such as wood (Figure 4.2h). They ensure that life in a desert tent helps to connect them to both the sky and nature, which in turn strengthens their ties to the Creator.

For symbolism, some families used to go out to the tent in the desert at the end of each week with the aim of providing privacy for family members to engage in some recreational activities (Figure 4.2i), such as horse riding and desert biking with each other, and which it is not possible to undertake in a house within the city. Also, a desert tent is considered to be the perfect opportunity for the gathering of all family members to share a meal or hot drinks like tea and talk in a family atmosphere (Figure 4.2j). They love to sit on the cold sand at night, around the hearth, which warms everyone in a family atmosphere full of happiness and fun.

Saudis are trying to relive the Bedouin lifestyle whilst living in a capital city. People lived in tents in the past. Now, they have moved into cities but they still have a hankering to the simple life of the tents. It is evident that Saudis spending the weekend in desert tents seek to express their identity, attachment and symbolism through exploring the spirit of the desert. Therefore, these aspects in turn will guide the data collection for this thesis, in order to provide design guidance for a contemporary home that able to meet Saudis' needs.

Fig. 4.2h: Practicing the simple life

Fig. 4.2i: A private space for women to practice recreational activities

Fig. 4.2j: Practising family activity in a private environment

4.2 The Generic Courtyard Home

The courtyard concept dates back thousands of years to Neolithic built environments (Ozkan, 2006, no page number). The courtyard is defined as

> An open-to-sky space that is the only source of light and air to the entire house. It is an outdoor living room where family life goes on. (Bada, 2006, p.292)

The courtyard constitutes the most private part of the house which is limited to use by family members (Ozkan, 2006, no page number). Ali (2007) emphasises the emergence of the pattern of buildings with internal courtyards since the beginning of civilisation, preceding the Islamic period. The courtyard was used in ancient Egyptian architecture and in the architecture of Mesopotamia, as well as Greek, Roman and Farsi architecture. This in turn indicates the widespread use of the courtyard in Islamic architecture.

In this context, Eid and Yousef (2000) add that the courtyard house is a phenomenon of architecture that has accompanied human civilisation from its beginnings until the present day, and has taken several forms and names from one era to another. In ancient Egyptian architecture (see Figure 4.3a) and that of Mesopotamia, it was called “court”; in Greek and Roman architecture, “atrium-peristyle” (see Figures 4.3b, 4.3c); in Byzantine architecture, “atrium” (see Figure 4.3d); in Gothic architecture, “copositer”; in Romanesque architecture, “cloister atrium”. It was called “patio” in Spain and finally took on different names in modern architecture such as “courtyard”, “inner plaza” and “inner *hosh*” – the Arabic word for courtyard.

The courtyard concept is commonly used in hot, arid regions from Iran in the east to the shores of the Atlantic in the west (El-Shorbagy, 2010).

Fig. 4.3a: Egyptian house – in the Greek period

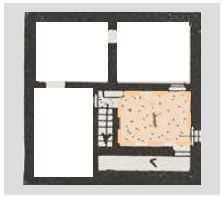


Fig. 4.3b: Greco-Roman atrium

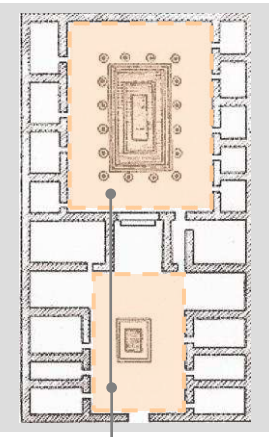
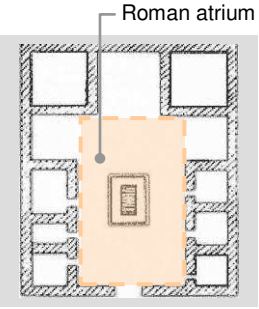
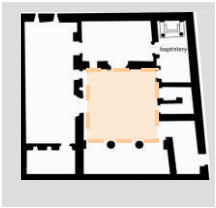


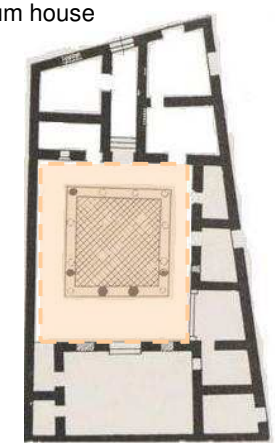
Fig. 4.3c: Roman atrium



(Source: Hales, 2003)

Fig. 4.3d: Byzantine – atrium house





(Source: Badawi, 2012)

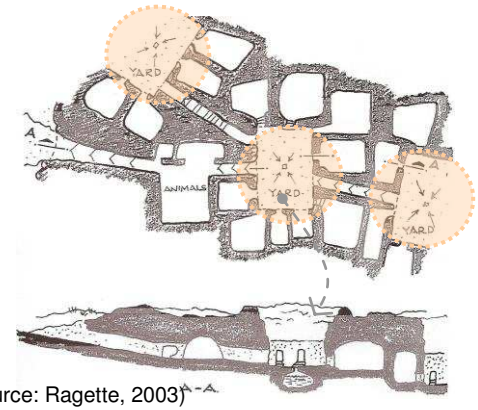
Muslims adopted the concept of the courtyard, as it is adaptable to their culture and social needs, as well as providing a prime solution to the effects of climatic conditions (El-Shorbagy, 2010). Historically, several examples of courtyard houses are known in Tunisia, Egypt, Iraq, Syria, Morocco and most other Arab countries (see Figures 4.4a, 4.4b, 4.4c, 4.4d, 4.4e and 4.4f). Underground as well as above-ground, courtyard buildings were built as far back as 3000 BC (Talib, 1984).

Eid and Yousef (2000) add that the courtyard is one of the key elements that continue to be used in all parts of the world with a hot climate, despite the different social, cultural and religious factors, which shows the courtyard's success as an architectural solution to different functional requirements. In various Middle East countries, the courtyard concept controls the process of house design; the houses of the Tulunid (868–955) and the Fatimid (909–1171) States were similar due to the presence of the main courtyard in the centre of the house. This courtyard is surrounded by the different spaces of the house. In addition, in some models, there are secondary courtyards surrounded by the service components of the house. The form of the courtyards is either square or rectangular (Eid and Yousef, 2000).

Costa and Noble (1978) argue that houses in the Middle East confirm that suitable houses were built around a courtyard for the provision of cultural needs and to deal with the climatic conditions. Mustafa et al. (2010) point out that in the courtyard house in Iraq, there is sometimes more than one courtyard – one for public use as a reception and stables, and a private one for family use – while all spaces and openings are open towards the courtyard. In Syria, Abboud (2006) emphasises the emergence of the pattern of houses with courtyards in the period between the sixth and first centuries BC, noting that each house consists of one or two floors, and the house is divided into two parts: the ground floor, which is dedicated to animals, while the first floor is dedicated to human occupants, usually contains a courtyard (Arabic: *baha*) and is surrounded by the different spaces of the house. Further, Abboud (2006) adds that the use of the courtyard in the old Syrian house continued through the Ayyubid (1174–1342) and Mamluk (1250–1517) periods, and most of the Ottoman era (1299–1923), when the walls and ceilings of the house were built of stone, in the form of a full or half vault, while wooden ceilings were used on the upper floors.

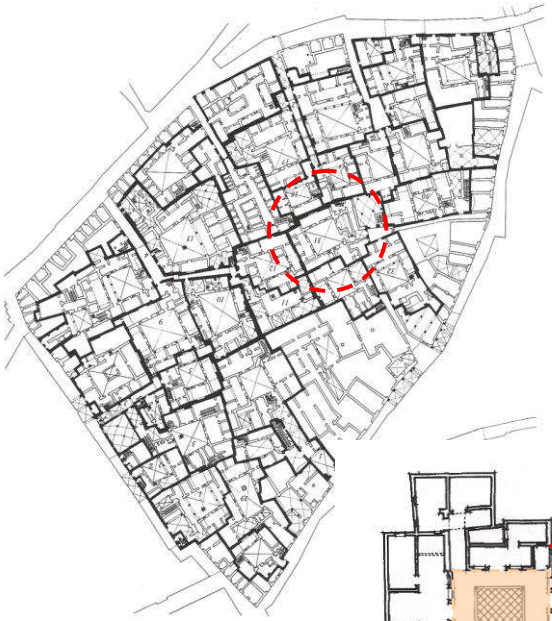
According to his study on the traditional domestic architecture of the Arab region, Ragette (2003) recognises that the courtyard concept (as a *hosh*, yard, court or patio) is a common and prime architectural feature among several Arabic towns such as Fez and Marrakesh in Morocco, Baghdad in Iraq, Tunis, and Algiers in Algeria.

Fig. 4.4a: Underground courtyards – heritage Tunisia (3000 BC)

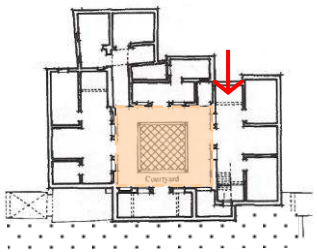


(Source: Ragette, 2003)

Fig. 4.4b: Traditional courtyard houses - Tunisia (1968)

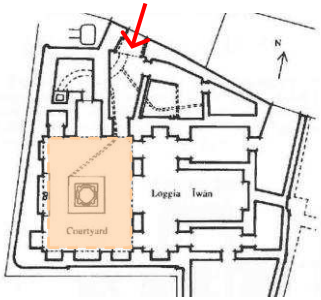


(Source: Akbar, 1988)



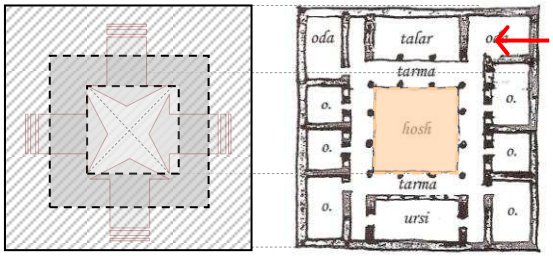
(Source: El-Shorbagy, 2010)

Fig. 4.4c: Courtyard house – Ancient Egypt



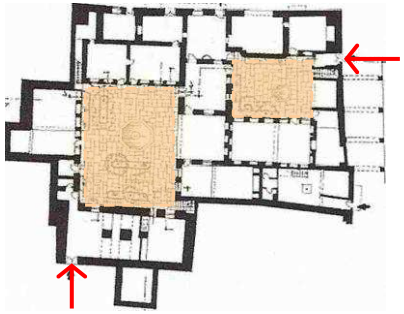
(Source: El-Shorbagy, 2010)

Fig. 4.4d: Courtyard house - Iraq



(Source: Ragette, 2003)

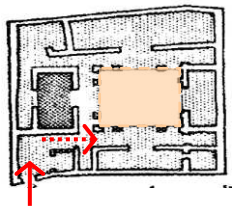
Fig. 4.4e: Courtyard house - Syria



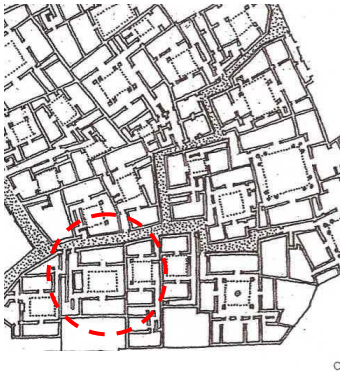
(Source: http://www.meda-corpus.net)

Fig. 4.4f: Courtyard house – Morocco

(Source: fesmedina.com)



Courtyard house



Central part of Fez

Group of courtyard houses

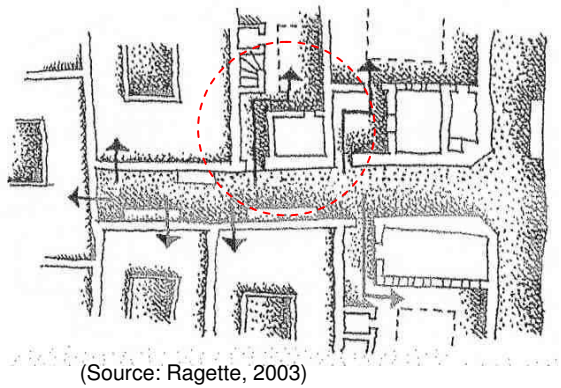
(Source: Ragette, 2003)

Ragette (2003) notes that *bayt* (the Arabic word for house) indicates the arrangement of spaces around the courtyard, which is generally called *hosh* or *wast-ed-dar* (an Arabic word meaning the centre of the house). The entrance lobby of the house is arranged to block direct views or access; the courtyard proper sometimes has a tree to give shade, flower basins and/or water features (a fountain or well) and is used as a family space. In a study about thermal comfort and privacy in Tripoli traditional houses, Sherief et al. (2010) indicated that traditional Arab houses are recognised by the courtyard, which is a physical and cultural symbol and suits Islamic teachings on gender separation, as well as a suitable application of local materials. It acts as a climate regulator in hot and dry regions, and allows inhabitants to carry out outdoor activities while protected from the sun, dust and wind (see Figures 4.5a and b).

For Ojam (2006, pp.128, 133), the courtyard brings out the concept of the vertical link between heaven (the sky) and the earth (the courtyard); it enhances contact with nature. In the Mesopotamian civilisation, in Iraq and Iran, most of the family celebrations and memorable occasions took place within the courtyard beneath the sky, in the presence of the moon and the stars. "The courtyard was not open to the sky but roofed by the sky" (Ojam, 2006, p.137). As a sense of place, light is very influential in creating emotional context; the courtyard constitutes a significant source for natural light, which in turn helps in the creation of a sense of place. The courtyard is "a way of harnessing the light without the climatic disadvantage of heat gain" (Ojam, 2006, p.137).

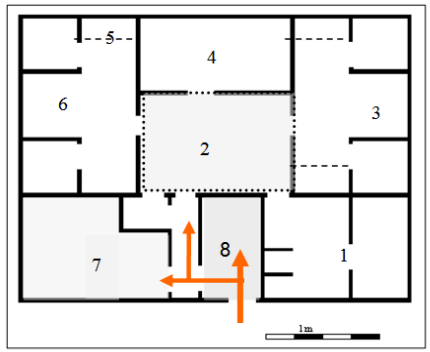
Ragette (2003) concludes that for a harsh hot, dry climate, the courtyard house is the most effective shelter, as long exterior openings can be avoided since light and air are obtained from the courtyard.

Fig. 4.5a: Courtyard houses – privacy protection in Tripoli: traditional houses, Tripoli, Libya



(Source: Ragette, 2003)

Fig. 4.5b: Courtyard house layout expresses privacy protection -Tripoli



Ground Floor

1- Kitchen, storage and bathroom 2- Interior courtyard
3- Multi-use room (*Kabul* room) 4- Living room
5- Wooden threshold 6- Reception or divan
7- Reception room 8- Hall entrance (*Sakefa*)

(Source: Sharif et al., 2010)

Moreover, the courtyard works towards the separation of different functions, especially between male and female spaces. The design of the house in the Islamic world retains a common architectural language that responds to both the hot arid climate and cultural needs; thus, the use of a courtyard was and is a common feature of Islamic houses. In the central province of Saudi Arabia, the courtyard, which forms the core of the house, not only acts as a climatic moderator but provides a private outdoor space where inhabitants can enjoy family privacy (Talib, 1984).

Functionally, the courtyard space is used for different activities such as cooking, laundry, a play area for children, as well as an outdoor living space (Sibley, 2006, p.69). Memarian and Brown (2006, pp.28–29) argue that the functions of the courtyard vary from one region to another in Iran, as well as in adjacent Arab countries. Thus, they identify the following purposes of the courtyard:

> The demarcation of limits of the property; the definition of a place of privacy for the family; the unification of spaces and elements in a house; the provision of a circulation element; the creation of a garden or cool place; the promotion of ventilation.

They add that, because of the extreme climatic conditions, a variety of means are employed to maintain comfort such as using building materials of high thermal insulation: mud and stone.

Socially, Sibley (2006, p.80) points out that courtyard houses of the North African medinas – Tunis, Algiers and Fez – are usually inhabited by extended families. Furthermore, she emphasises that, externally, courtyard houses have no signs of segregation between poor and wealth households; i.e. outside facades have similar features, colours and materials.

4.2.1 The system of a courtyard home

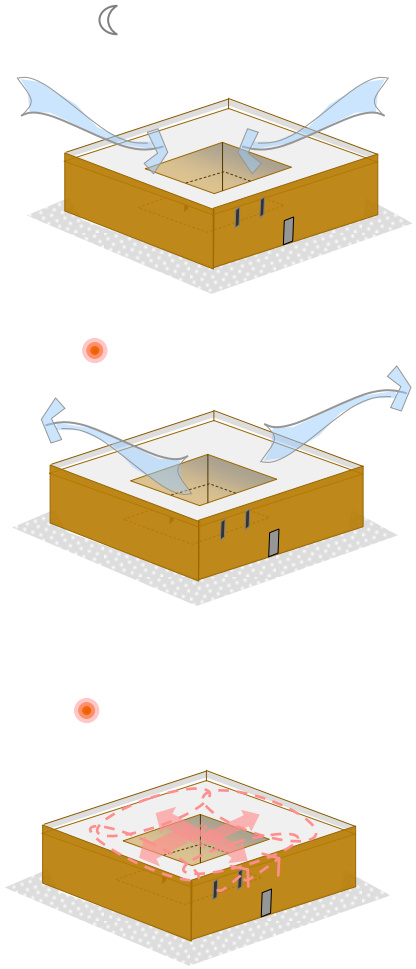
Courtyard homes in hot, dry regions have an environmental cycle of three regular parts, as stated by Talib (1984), as follows: during the first part of the cycle, the cool night air descends into the courtyard and fills the surrounding spaces, and remains so until the late afternoon; during the second part, around noon, the sun directly strikes the courtyard floor, where some of the cool air starts to rise and leaks out through the surrounding rooms. At this time, the outdoor temperature is very high, but the mud walls do not allow the external heat to infiltrate the indoor spaces. The time-lag for heat to penetrate the external walls may be as much as twelve hours. In addition, on average three of four perimeter walls are party walls; thus, the house remains enclosed on all sides and is insulated from heat gain during the day. Finally, during the third part of the cycle, the courtyard floor and the inside of the house become warmer, as most of the cool air kept within the rooms spills out by sunset. When the sun sets, the air temperature falls rapidly, the courtyard starts to become irradiated, and cooler air begins to flow and descend

into the courtyard; thus, a new cycle begins (see Figure 4.6).

One of the most interesting issues in the courtyard home is the seasonal movement which occurs between rooms on different sides of the courtyard. Memarian and Brown (2006, p.31) illustrate that occupants tend to move from one space – the summer room – to another – the winter room – based on the orientation of the space itself and how it benefits (or not) from solar movement and wind flow.

In terms of space arrangement, and due to two prime factors – hospitality and privacy – the courtyard house is divided into two distinct areas: male guests' area, those spaces located close to the main entrance; and family members and female guests' area, those spaces positioned far away from the main entrance. As for openings, where these are necessary, they are very small and located above eye level to prevent passers-by from looking in. The main entrance is placed so as not to allow a direct view into the private domain of the house (Memarian and Brown, 2006, p.35).

Fig. 4.6: Courtyard house – the environmental cycle



4.3 Courtyard home in Central Province

This part of the study focuses on the courtyard home in the central province of Saudi Arabia, primarily in relation to three main principles: human needs, place and house. More specifically, it examines three aspects: first, whether human needs – climatic comfort, safety and security, privacy, status and external appearance – are met; second, how the courtyard house is perceived as a place – attachment, identity, symbolism, location and environment; and thirdly, the home as a house – the physical object in terms of types, thresholds, internal arrangement, nature of spaces, and materials and construction.

4.3.1 Human needs

The traditional built environment is constructed on a conceptual process of traditional living – the basic needs and the associated functions that are present in the cultural setting of the inhabitants. Four distinctive determinants are considered: "social structure, defence requirements, climatic adaptation, and economic necessity" (Eben-Saleh, 2002, p.517).

The courtyard home layout is based on the basic needs and the activities associated with the cultural surroundings of its residents (Eben-Saleh, 2001). Among other issues, it provides for its inhabitants' needs of comfort and repose (Turkustani, 2008). It grows over time to satisfy the expanded needs of the family, i.e. it is never complete when built (Bahammam, 1998). The traditional dwelling is more than just a shelter; it is environmentally compatible and socially adaptive (Mubarak, 2007). The courtyard home is considered to be the most suitable form of residence for Saudis, both from a climatic and a socio-cultural perspective (Al-Hemaidi, 2001).

4.3.1.1 Climatic comfort

The central region of Saudi Arabia is characterised by a dry continental desert climate, which is clearly reflected in the form of the urban fabric of its cities and the architectural composition of its homes; narrow and winding alleyways to minimise the impact of hot wind; and compacted and interconnected houses that reduce their walls' exposure to the sun (Turkustani, 2008; Al-Saleh, 2008). The spatial hierarchy of narrow and winding streets, alleyways, cul-de-sac streets, and *baraha* "an interesting aspect of the streetscape where two or three narrow alleyways may open into a large public space" (Talib, 1984, p.58), function like the courtyard in a house. It acts as a climatic moderator – providing shade in summer and retaining

the cool air at night (Eben-Saleh, 2001; 1998a), (see Figure 4.7a).

The extreme hot and dry climate in the central region imposes an introverted form on the built environment in general and houses in particular. Houses are built one or two stories high to avoid exposure to the sun, and most buildings are grouped together to provide shade and create conditions for a cooler microclimate (Moustapha et al., 1985) (see Figure 4.8). The densely built environment contributes to protecting homes from the negative effects of the sun's heat; i.e. homes shade each other throughout the day because they share as many as three walls (Talib, 1984), (see Figure 4.9).

As a result of the dense layout, the sun cannot penetrate homes unless it is directly overhead. Moreover, narrow and winding alleys help to provide shaded streets for pedestrians (Talib, 1984). In general, the compactness of homes aids in increasing shading, reducing exposure to solar radiation, and decreasing energy waste – creating a more comfortable micro-climate (Al-Nowaiser, 2006).

Fig. 4.7a: The spatial hierarchy of the built environment – narrow winding alleyways

Fig. 4.7b: Homes are grouped to provide shade to each other

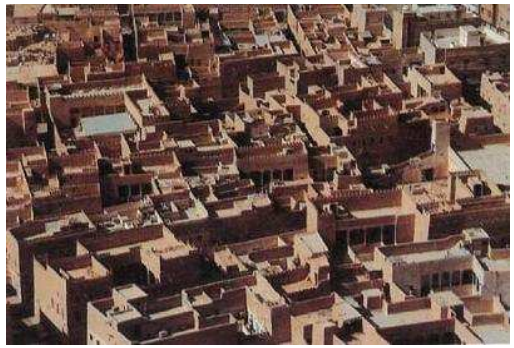


Fig. 4.8: Homes shade each other

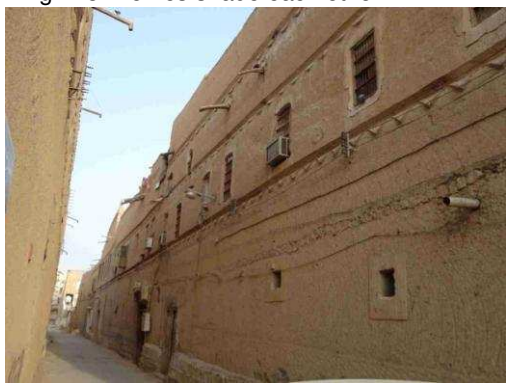
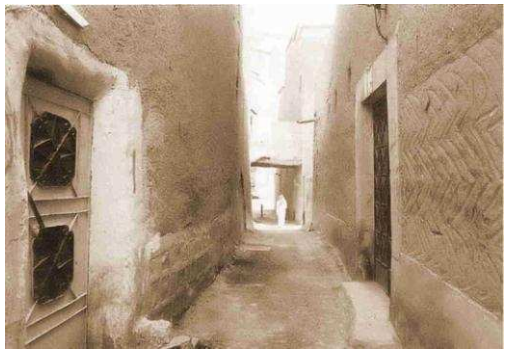


Fig. 4.9: Narrow and winding alleyways



Courtyard homes are built of thick walls of mud around one or more courtyards (Bahammam, 1998). They face away from the street and receive their air and light from the courtyard(s) which acts as a temperature regulator, providing shade in summer and retaining the cool air at night (Eben-Saleh, 1998a).

The courtyard space functions as a light well as well as a source of ventilation to the spaces around it (see Figure 4.10). Also, the external mud walls act as a passive cooling system; they store cool air overnight, and dissipate it slowly during the day. The external thick walls do not allow external heat to penetrate to the inside of the house (see Figure 4.11). Nonetheless, to reduce the high afternoon temperatures in summer, residents tend to spray water on the walls and floor of the courtyard which helps to produce evaporative cooling and adds some humidity to the dry air (Talib, 1984).

The main elevation of the house, the only wall that is not shared with the neighbouring houses, faces a narrow alley and thus benefits from the shading of the house opposite (see Figure 4.12). External openings – windows − are small and very limited; most of them are protected by wooden shutters (Talib, 1984). However, in order to evacuate the hot air from inside the house, vents and wind channels are used throughout so that the heated air in the interior spaces can rise and flow outside the house (Moustapha et al., 1985).

Fig. 4.10: Courtyard acting as a shaft for light and air

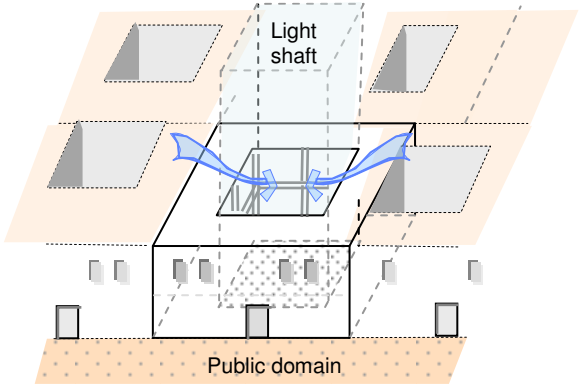


Fig. 4.12: The main elevation benefits from the shadow of the opposite house

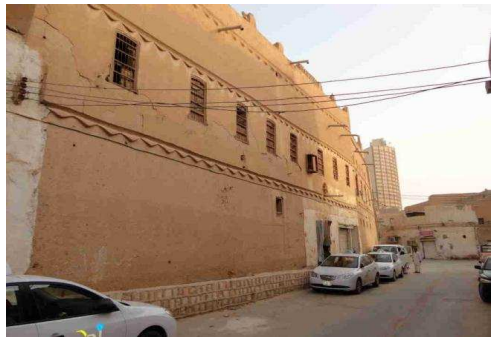
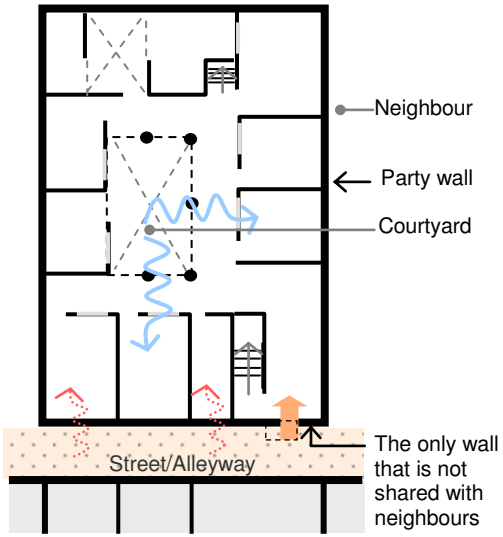


Fig. 4.11: External thick wall does not allow heat to penetrate to the inside of the house



4.2.1.2 Safety and security

Historically, the development process of traditional neighbourhoods has always considered safety and security as important factors that influence the spatial pattern (Eben-Saleh, 2001; Al-Nowiser, 1996). The traditional spatial layout protects its residents through the internal layout, control of access, hierarchical territorial order, cul-de-sac systems, courtyard dwellings and small openings toward streets and alleyways (Eben-Saleh, 1998; Al-Nowaiser, 2006).

The task of achieving security in traditional neighbourhoods is not confined to the home, but also the overall planning of the neighbourhood, with its narrow winding streets and semi-private spaces around homes, which all contribute to meeting the residents' need for safety and security. Thus, the layout of the city can mislead and disorient strangers. Usually, a group of relatives live in one residential area and are linked to one semi-private space (see Figure 4.13), which is controlled and maintained by them (Moustapha, Costa and Noble, 1985). As well as performing the function of streets, these spaces play a significant role as open spaces where social and cultural activities take place (see Figure 4.14). Thus, "The inward defensive neighbourhood patterns and dwellings around courtyards enhance the community security" (Al-Nowaiser, 2006, no page number).

As Eben-Saleh (2002) notes, in order to provide for security, openings are restricted to doors at street level and small slots or square windows at upper levels (see Figure 4.15). Proximity between home and essential uses − such as mosques and schools − in a traditional neighbourhood enhances pedestrian movement, which in turn creates a liveable community that offers safety and security for its inhabitants (Al-Nowaiser, 2006).

Fig. 4.13: Relatives are grouped within one area linked with a semi-private space

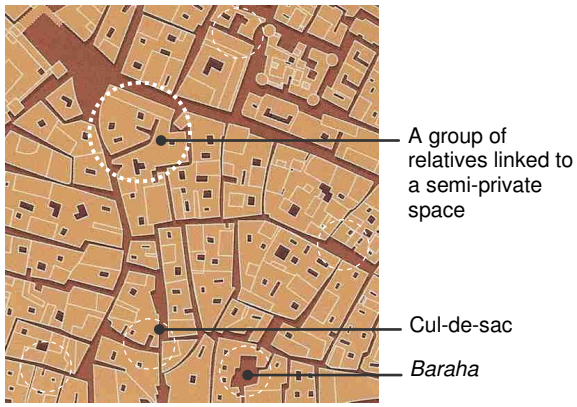
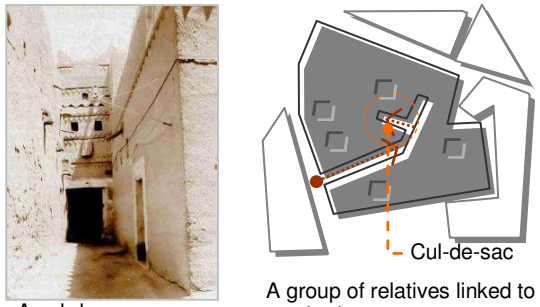


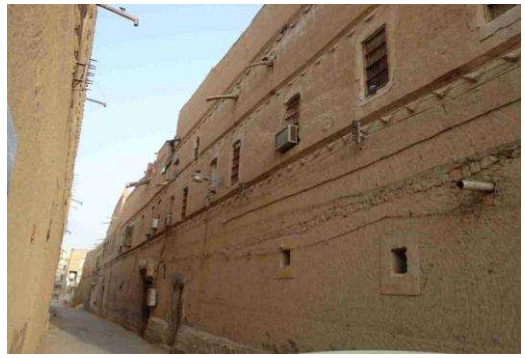
Fig. 4.14a: Semi-private spaces



A cul-de-sac

A group of relatives linked to semi-private spaces

Fig.4.14b: A main elevation showing the openings



In contrast to the previous views, Al-Ibrahim's study (1990) illustrates that, according to residents' experiences, the party walls on the roof level of the courtyard homes reduce the feeling of safety and security among residents, as they make it possible for thieves to jump from the roof of one house to another.

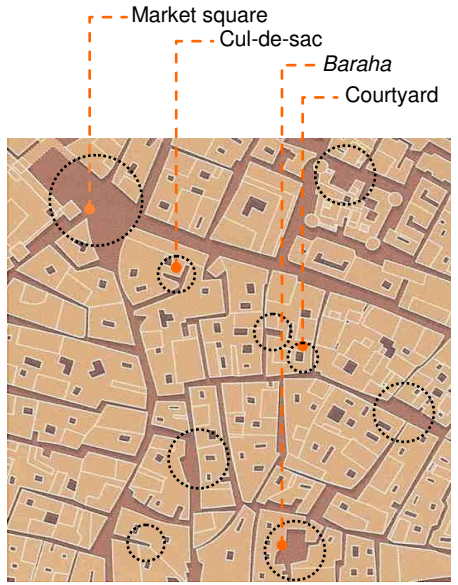
4.3.1.3 Privacy

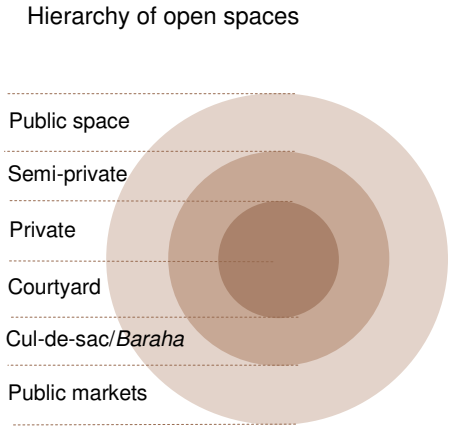
The development process of a traditional neighbourhood considers privacy as an important factor that can affect the urban pattern of the built environment to a great extent (Eben-Saleh, 2001). Respect for individual privacy may be the most influential spatial-behavioural norm that regulates Saudi society and thus its physical setting (Al-Nowaiser, 1996). The inward pattern of a neighbourhood, as well as homes around courtyards, enhances community privacy (Al-Nowaiser, 2006).

At the level of the neighbourhood, privacy is maintained through a segregation system of open spaces: public – public markets and circulation routes; semi-private – cul-de-sacs and *baraha*; and private – courtyards of homes; each of them has a defined domain in terms of use and function (see Figure 4.15). Within semi-private spaces, there is no contact between inhabitants and strangers, while it is invited within the public spaces (Eben-Saleh, 1998b).

At the level of the courtyard home itself, it is as an inward layout that reflects considerable care in order to respect the rights of the individual neighbours as well as those of the whole community. Anyone is free to build, provided they do not cause any damage or harm to others (Bahammam, 1998).

Fig. 4.15: Hierarchy of open spaces within a traditional neighbourhood

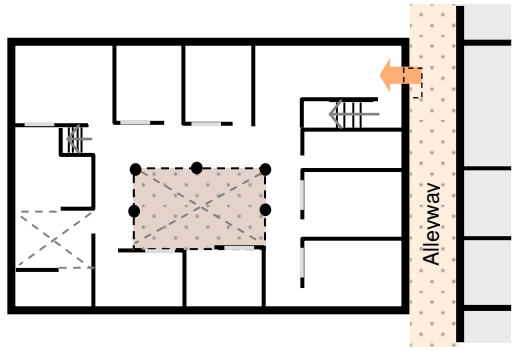




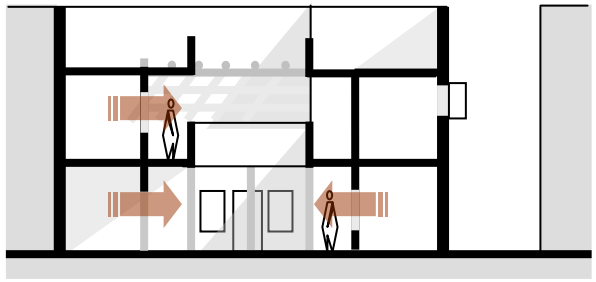
The introverted character of the dwellings is influenced by a culture that stresses the privacy of the family setting and the seclusion of its female members. Therefore, the courtyard home is planned so that none of its windows overlook neighbouring homes (see Figure 4.16a, b and c); nor can the courtyard be seen by any neighbours from their roofs (Moustapha et al., 1985).

Other studies (Al-Nowiser, 1985; Moustapha et al. 1985) assert that the various features of the traditional built environments provide opportunities to enhance, practice, control and protect the need for privacy. Homes only have a few small windows (if any) facing the street in order to protect family privacy (Figure 4.17) (Turkustani, 2008). Furthermore, the design of window and door openings is expected to render due respect to the privacy of surrounding homes (Eben-Saleh, 2002).

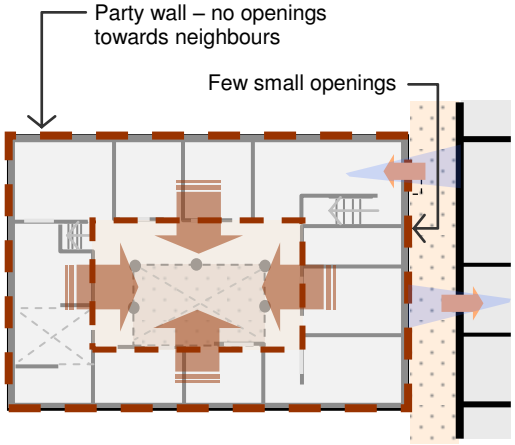
Fig. 4.16: Courtyard home is inward oriented plan



a. Courtyard house layout

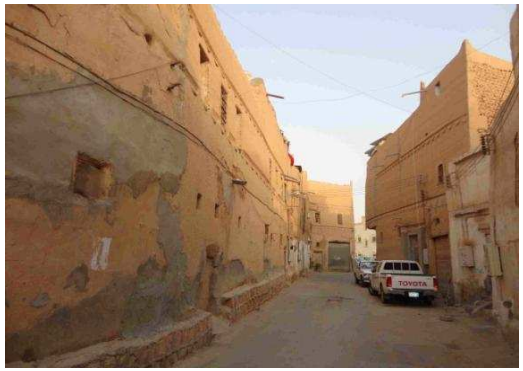


c. Section shows the orientation of openings towards the courtyard



b. All spaces are inward oriented

Fig. 4.17: Few small openings facing the street



They are arranged carefully so that they do not face the neighbours' door and window openings (Talib, 1984). To summarise, Moustapha et al. (1985) agree with Bahammam (1998) that dwellings' privacy in Saudi society is defined by its culture, whose impact is clearly visible in traditional dwellings by the use of the courtyard form.

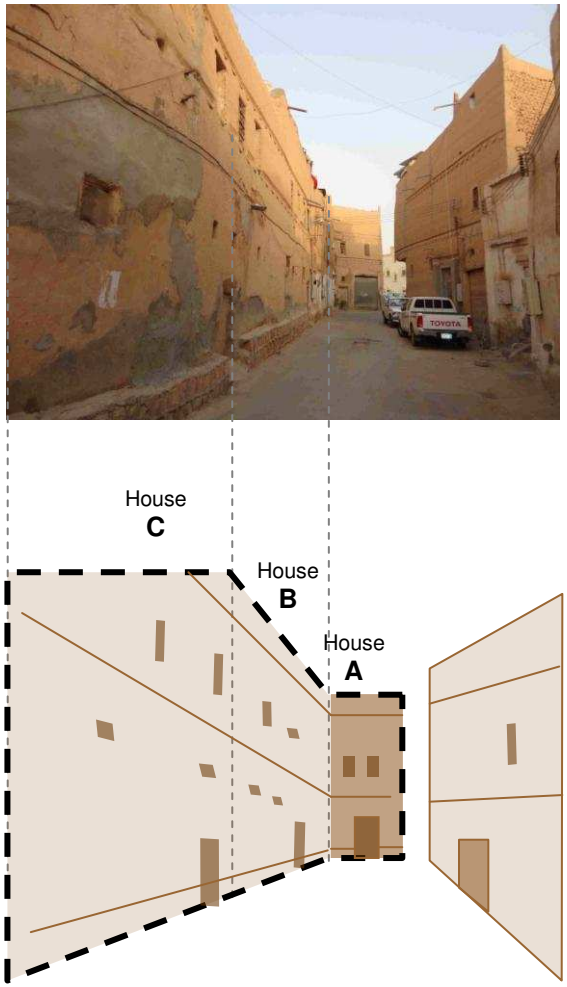
In addition, Saudi residents tend to define their homes in the following three different spheres: first, privacy of the whole home; second, privacy between the sexes – male and female guests; and third, privacy among the home's inhabitants – boys and girls (Bahammam, 1987). The courtyard space is the place where inhabitants' activities take place without their privacy being compromised by overlooking from adjacent dwellings (Al-Hemaidi, 2001). Houses are arranged in a way to protect the maximum degree of privacy for their occupants (Eben-Saleh, 1998a).

By contrast, Al-Ibrahim (1990) states that people prefer not to have party walls, as they actually reduce privacy, especially where inhabitants sleep on roofs during the summer.

4.3.1.4 Status

As King (1998) states, courtyard homes reveal little of their interiors from the outside; as their facades are plain and simple. It is difficult when viewing the urban image of Riyadh's traditional neighbour-hoods to recognise where one dwelling ends and where the next begins (see Figure 4.18); and the size of most traditional houses is not apparent from the street (Bahammam, 1998). Eben-Saleh (2001) points out that it is difficult to recognise the walls of a wealthy person's mansion from those of a humble house. Traditional homes appear simple and modest from the outside (Turkustani, 2008).

Fig. 4.18: House boundaries cannot be recognised from the street



4.3.1.5 External appearance

Traditional houses are criticised for being limited in decoration and architectural details, especially in regard to the facades (Turkustani, 2008) where geometric patterns and inscriptions are used in only a few cases (Talib, 1984); (see Figure 4.19). Al-Saleh (2008) asserts that the majority of the houses lack decoration and patterns due to the impact of the Islamic culture, which prefers not to display extravagant decoration. The limitation of local building materials and the severe architectural expression reflect the desert environment and lack of alternatives in building technology (Mubarak, 2007). Traditional homes in the central region are characterised by the uniformity of colour, texture, building materials, construction techniques and architectural details (see Figure 4.20). As a result, people feel that traditional houses have a poor reputation that does not match 21st century lifestyles, causing people to feel left behind and seek more modern dwellings (Eben-Saleh, 1998). The external appearance of the courtyard home is devoid of decoration and inscriptions except where elements such as the gutter – Arabic *Mizrab* (see Figure 4.21) – is used for the purposes of alleviating monotony and adding aesthetic touches to the main facade. Moreover, it is noted that the lack of projections in the external walls of the house contributes negatively to the external appearance (Al-Saleh, 2008). However, this is in contrast to the interior spaces where decorations abound (Figure 4.22).

Fig. 4.19 : Using geometric patterns and inscriptions in only a few cases

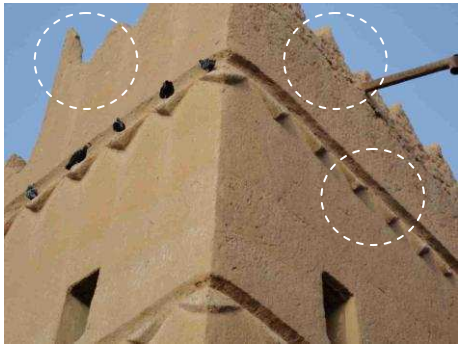


Fig. 4.20: The uniformity of colour, texture and building materials

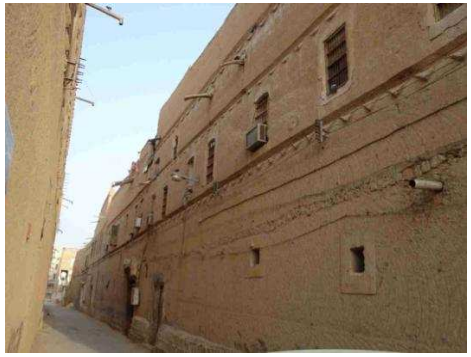


Fig. 4.21: The wooden gutter – *Mizrab*

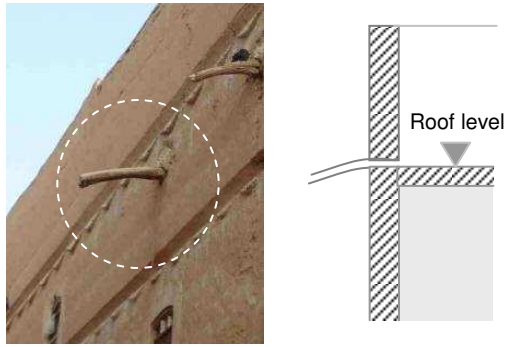


Fig. 4.22: Decoration on the interior walls

4.3.2 Place

This part of the study will analyse the traditional home as a place that covers five aspects: attachment, identity, symbolism, location and environment.

4.3.2.1 Attachment

The spatial features of the traditional built environment, which include symbolic, authentic, social, sacred and communal places, are associated with culture, which in turn encourages inhabitants to be more involved with activities in the local environment. This kind of environment seems to play a fundamental role in enhancing residents' attachment to their built environment; the territorial network of private (courtyard), semi-private (cul-de-sac and *baraha*) and public spaces (marketplace and streets), and helps to facilitate various social contacts and activities (Al-Nowaiser, 1985; Eben-Saleh, 1997, 2001). The spatial pattern reinforces the bonds between social and environmental spheres (Al-Nowaiser, 2006). In the traditional built environment, streets and alleyways play as fundamental a role as more significant public open spaces in the daily life of its residents (Al-Hemaidi, 2001). Many household activities take place in these quiet streets and alleyways, which are considered an extension to people's homes (Eben-Saleh, 2001).

In a different context, as an attachment to sacred places, courtyard homes are usually directed towards Mecca, the holy city where the Holy Mosque is located. This highlights the place attachment between the traditional dwelling and the original place of worship – Mecca. It also highlights the role of home as a place of worship, especially for women who prefer to pray at home (Al-Nowaiser, 1985).

In the central region, neighbourhoods possess a high degree of ethnic and religious homogeneity. Traditional homes tend to be in harmony with the culture of their residents. The courtyard home is usually centred around an interior court which is the locus for an intimate family life; it succeeds in meeting the culture of the inhabitants, which incarnates the concept of inhabitants belonging to a substantial place (Mustapha et al. 1985).

The whole process of building a courtyard home – such as dwelling size, nature and number of spaces, internal arrangement – are established mainly by the owner and the master builder. This, in turn, as Bahammam (1998) argues, enhances the sense of belonging between residents and their houses. The courtyard space, as an inward-directed, intimate outdoor space within the home (Talib, 1984) comprises a focal point for family members, as a private open space with direct visual contact with the sky, where they can undertake different social and religious activities, as well as a

playground for children (Bahammam, 1998).

4.2.2.2 Identity

Al-Nowaiser (1985, p.5) concludes that the term “place” in Saudi society is defined as something more than a geographical location; its identity stems "from its use and from the attached significance of positive or negative images". He adds that places have strong, commonly shared meanings, as long as individuals and groups are influenced by communal social, cultural and religious norms. The traditional built environment represents one of those systems that enable people to express their identity; in this sense, traditional communities show very harmonious associations within their home environments (Al-Naim, 2006). The urban pattern of a traditional neighbourhood represents its identity as an Islamic residential community. Traditional neighbourhoods' reliance on socio-religious beliefs ensure wider acceptance of rules and provide community identity (Al-Hathloul and Mughal, 1999).

The physical place is designed to meet the requirements of the environment and cultural setting, in the sense that a courtyard house built of natural and local materials obtained from the surrounding environment (Mubarak, 2007), where the form of the house is inward-oriented with minimal and small openings on the exterior wall, is intended to meet the cultural attributes of Saudi society (Bahammam, 1998). The courtyard concept incarnates the adaptation to the local climate (Moustapha, Costa and Noble, 1985).

4.3.2.3 Symbolism

Al-Nowaiser (1985) identifies three elements that play a major role in forming symbolic places: environment, society and religious forces. Thus, he argues that in

Fig. 4.23: A traditional neighbourhood urban pattern; winding alleyways and hierarchy of open spaces.

a. Built environment urban pattern

b. Aerial view – inward-looking

traditional communities, the built form is able to express certain symbols that reflect residents' cultural customs and environmental context. On the other hand, he concludes that the spatial elements of the physical environment in the traditional home also symbolise the major activities taking place in it. The courtyard represents the most important space in the traditional home, able to symbolise the daily family activities which take place in it: eating, talking, gathering, sleeping, worshipping, entertaining (Bahammam, 1998) and wedding celebrations. The courtyard home usually involves three generations of the same family (Al-Nowaiser, 2006).

4.3.2.4 Location

In the traditional built environment, residential districts share similar features, i.e. the typical layout is recognised by dense morphology with minimal access from the outside, compact homes, and a hierarchical network of semi-private streets and narrow winding alleyways. This hierarchy of alleyways and cul-de-sac streets connect the residential quarters with one another and with the rest of the city. It is a common feature in each neighbour-hood to distinguish the physical separation between the different domains: private – courtyard homes; semi-private – cul-de-sacs; and public – streets and city centre (Eben-Saleh, 1998a).

4.3.2.5 Environment

The form of traditional houses is dictated – among other things – by their natural environment (Moustapha et al., 1985). Building materials are mostly procured from the surrounding environment and assembled according to traditional methods. The limitation of local building materials reflects the surrounding desert environment (Mubarak, 2007). However, it has also been pointed out that people in the traditional built environment invest in local natural resources that in turn help in producing interdependence between the built environment and the natural environment (Eben-Saleh, 2002).

Courtyard homes are built around interior courtyards, which function as a private space that connects its inhabitants with the outside world (Bahammam, 1998), in the sense that it works through the integration of the internal environment of the house with the external, and achieves the concept of adapting to weather changes throughout the day, including the succession of night and day, and the movement of the winds.

4.3.3 House

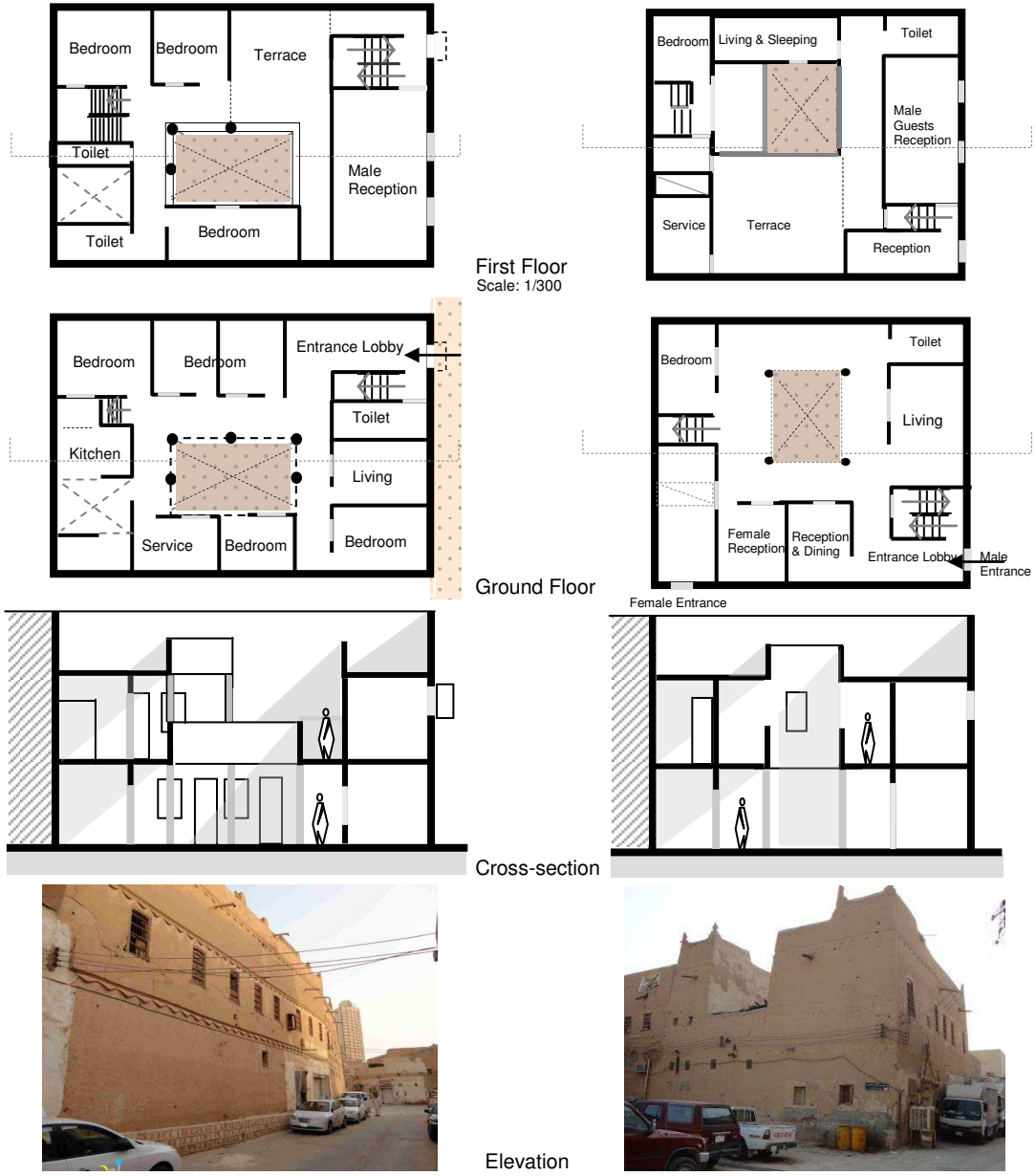
This part of the study will investigate the traditional home as a physical object (i.e. the house), in terms of its different types, spaces and activities, arrangement of spaces, building materials and thresholds:

4.3.3.1 House types

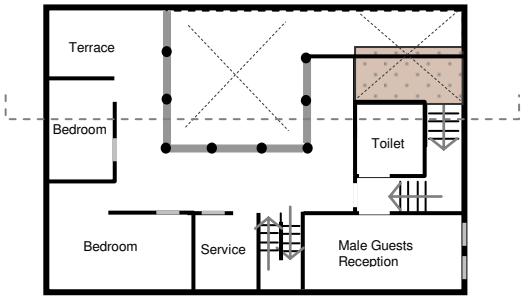
According to Moustapha et al. (1985), traditional houses are divided into four types (see Figure 4.24) based on the position of the courtyard. First, the centrally-positioned courtyard, surrounded by dwelling spaces, constitutes the most common form of courtyard houses; second, a U-shaped courtyard, where spaces surround the courtyard on only three sides; third, an L-shaped courtyard, wherein the courtyard occupies one corner of the building; fourth, the courtyard is divided into two parts, corresponding to the need for segregation between the private and public entrances into the house.

Bahammam (1998, p.558) describes the courtyard home as a "lumpy thick walled adobe structure built around one or more rectangular courtyards. Its exterior walls have small openings, and its interior walls, which surrounded the courtyard, have large openings".

Fig. 4.24: The four types of courtyard house

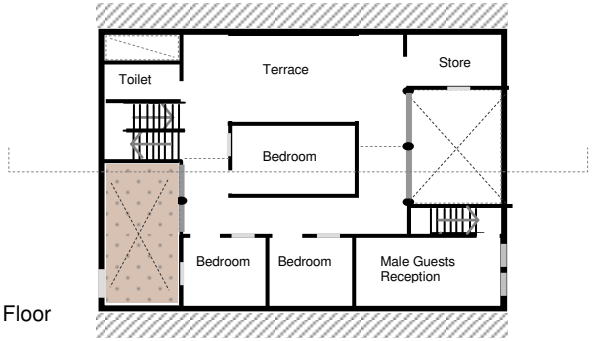


First Floor



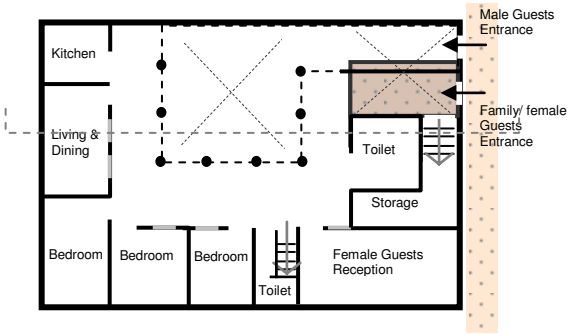
Scale: 1/300

First Floor

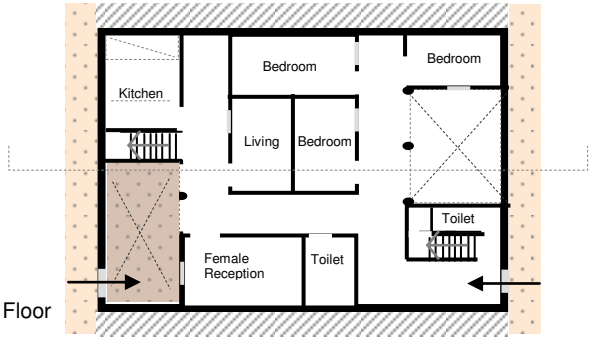


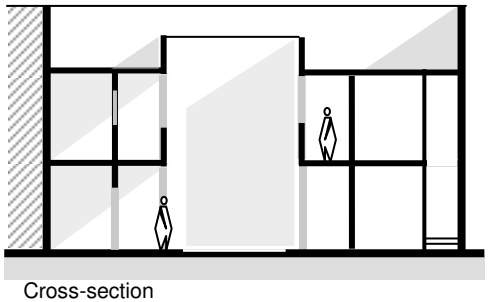
Scale: 1/300

Ground Floor



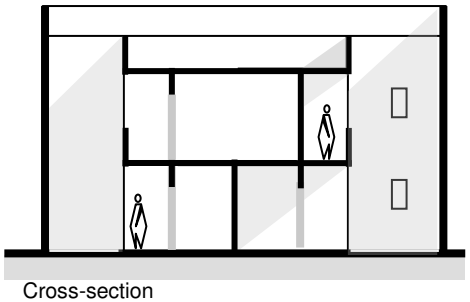
Ground Floor





Cross-section

Elevation



Cross-section

Elevation

He adds that the courtyard house grows up as the family size increases via marriage or new births. At the beginning, two or three rooms might be built around the courtyard on the ground level. However, at a later stage, rooms may be added – horizontally or vertically (on the first floor) – as required over a period of several generations, as the children grow or the sons get married (Talib, 1984).

4.3.3.2 Thresholds

The main entrance(s) of a courtyard home constitute the boundary line – or the only connection – between the private domain – the dwelling, and the outside world, either the semi-private, cul-de-sac, or public, alleyway, domain (Al-Saleh, 2008). Therefore, the entrance lobby is designed with an angled shape in order to prevent the visitor on entry, or any outsider, from gazing into the house (Moustapha et al., 1985; Al-Saleh, 2008); (see Figure 4.25).

According to Ragette (2003), the traditional house – except the centrally positioned type – has two entrances, one for male guests and the other for family and female guests. The male entrance leads directly into the guests' reception area on the ground floor or to a staircase leading to a reception room upstairs for male guests. In contrast, the women's entrance usually leads to the courtyard (see Figure 4.26). However, male and female entrances have four different locations. These are affected by factors such as the position of the house and whether it is open to two streets or just one. With a central positioned courtyard house, which opens to one street, the entrances for men and women are placed on one corner of the house (see Figure 4.26).

With U-shape courtyard house, it still opens to one street, but the men's and women's entrances are separated completely, on opposing corners. The women's entrance leads to a reception room connected to the courtyard, while the men's entrance leads

Fig. 4.25: House threshold is the connection between the private and semi/public domains

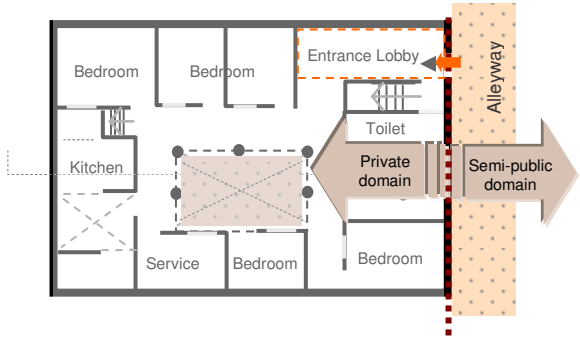
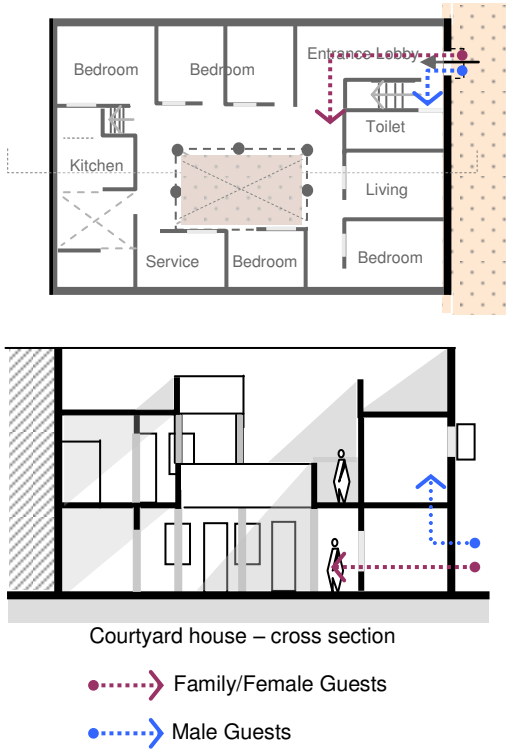


Fig. 4.26: Male guests and family/female guests' entrance and routes



to an inner staircase that connects the entrance to a men's reception room on the upper floor (see Figure 4.27). As for an L-shaped courtyard that opens onto one street, the entrances for men and women are placed in one corner of the house, but the two are separated by a wall inside the house, where the women's entrance leads to the courtyard, while the men's entrance leads to the inner staircase connecting the entrance to a reception room (Arabic *majlis*) on the upper floor (see Figure 4.28). In terms of the two courtyard house, the entrances open onto two opposite streets. This feature enables this house to have completely separate entrances for men and women. Each entrance leads to separate courtyards (see Figure 4.29). Al-Saleh (2008) adds that there is often an element of monitoring people entering the house from above the main entrance (Arabic *Turma*), (see Figure 4.30). Further, he emphasises that it is rare to find entrances of neighbouring houses facing each other.

Fig. 4.27: The separation between male guests and family/female guest entrances, U-shape courtyard house

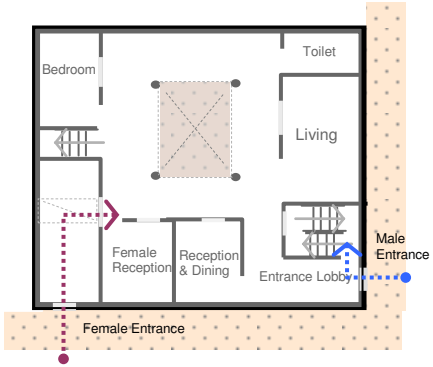


Fig. 4.28: The separation between male guests and family/female guest entrances, L-shape courtyard house

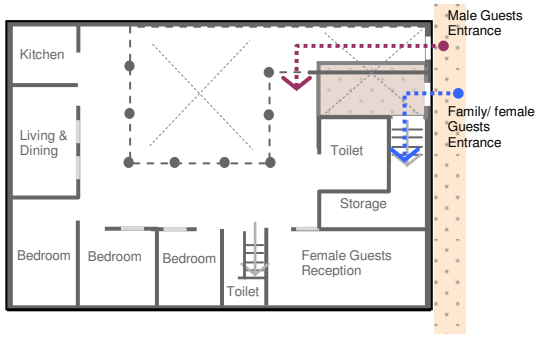


Fig. 4.29: The separation between male guests and family/female guest entrances, two courtyard house

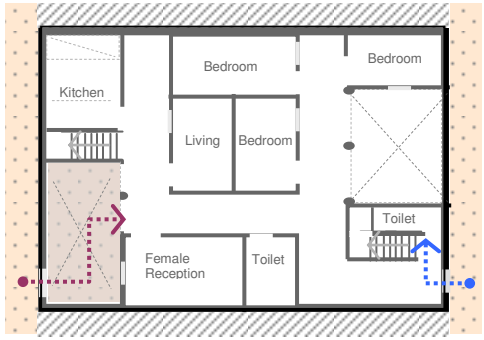
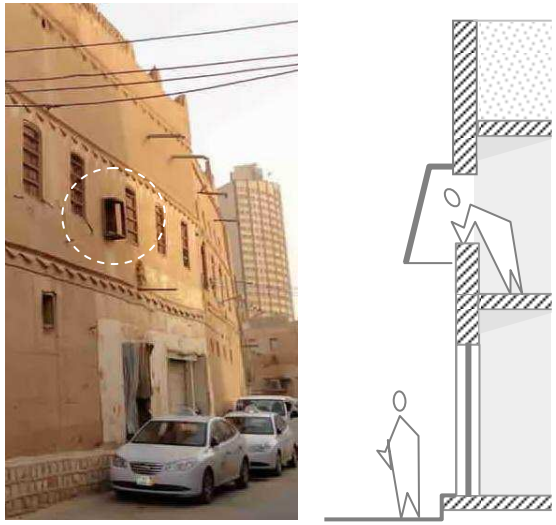


Fig. 4.30: *Turma*, to monitor entrants



4.2.3.2 Internal arrangement

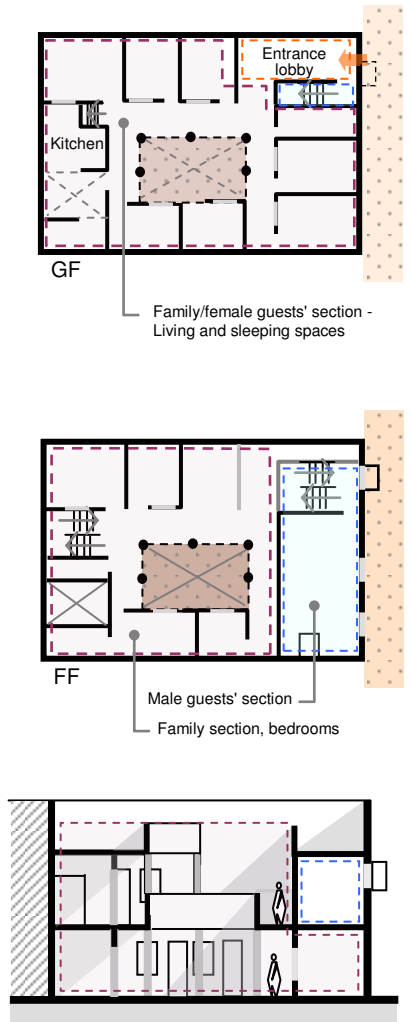
The arrangement of spaces in a courtyard house is based on the segregation of genders (Al-Saleh, 2008). Thus, the male section is usually located adjacent to the entrance lobby either on the ground floor (Bahammam, 1998) or upstairs in the reception room, and in this case, a staircase is included within the entrance lobby for male users (Ragette, 2003; Talib, 1984); (see Figure 4.31). For privacy purposes, the family section is always located away from the house entrance (Bahammam, 1998).

Accordingly, Bahammam (1998) describes a courtyard dwelling on two floors: the ground floor, which contains of: main entrance for males and females; five bedrooms; the women's reception room (Arabic *majlis nis'a*); the dining room, mostly for family and female visitors; two bathrooms – one of them close to the main entrance for visitors' use; the kitchen, which is usually located adjacent to a roofless area adjacent to the family staircase; two staircases, one for male visitors close to the main entrance, and another for the family, located in the core of the house; and finally, the courtyard which is located at the centre of the house, with all spaces surrounding it. The first floor comprises the male reception room – the largest space in the house, normally placed adjacent to and directly accessible from the entrance lobby; the master bedroom**;** three further bedrooms and two bathrooms, one of which is connected to the master bedroom.

4.3.3.3 Nature of spaces

Bahammam (1998) divides the traditional house into two main sections: guests and family. The family section consists of the parents' bedroom and a set of rooms, which are used for several purposes such as sleeping, eating and family gatherings.

Fig. 4.31: Internal arrangement



These spaces tend to contain only small and simple furniture which can be rearranged easily. The guest area of the house consists of a reception space, the largest space in the house, with a guest bathroom. This area is used by males for several purposes such as sitting, dining and sleeping. The courtyard constitutes the main focal point and an important element for the dwelling's inhabitants, where most of the family activities – congregation, worship, entertainment and eating – take place. House spaces open out to a colonnade surrounding the courtyard. Cooking is usually either in the kitchen in normal daily life, or in the courtyard if there is a special event (Mubarak, 2007).

Family rooms are easy to adapt for different uses, which change according to the changes in climate, both daily and seasonal. In addition, people sleep on the roof terrace during the summer, but during daylight hours and in the winter they do so inside the rooms either on the ground or the first floor. Eating and family activities may be in the open spaces around the courtyard in the winter, to take advantage of the sun, and inside the rooms on the ground and the first floor in the summer.

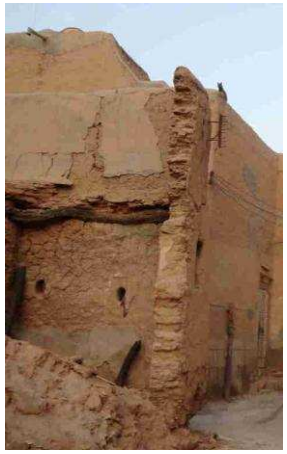
4.3.3.5 Materials and construction

Mud, stone and timber constitute the most essential building materials in the central region of Saudi Arabia. The walls are built of solid sun-dried blocks, while the roofs are built of wooden rafters (palm or *tamarix* trunks) by laying them parallel to each other, and having them covered with a mixture of mud and hay sticks in three layers for reinforcement (Bahammam, 1998; Mubarak, 2007); (see Figures 4.32a, b, c).

The white plaster is used as a finishing material around openings (doors and windows); and for covering internal walls, to keep them clean, as well as a base for decorating (see Figure 4.33). The foundations are laid on rubble stone masonry (Mubarak, 2007; Al-Saleh, 2008), see Figure 4.34.

Doors and windows are made of timber that is available locally (Turkustani, 2008). Most of the windows are further protected by wooden shutters that may be closed during sandstorms (Talib, 1984); (see Figures 4.35a and b). However, the traditional home – in a time of urbanisation and economic growth – cannot keep up with the massive demand for houses. The demand results from the rapid increase in population. The deficiency is that these houses cannot deliver in sufficient numbers, as they are not characterised by mass production or rapid construction (Eben-Saleh, 1998).

Fig. 4.32: Mud, sun-dried blocks for walls; and timber, palm or *tamarix* trunks for roofs



a. Mud walls

b. Mud blocks

c. Timber rafters for roof

Fig. 4.33: Using plaster for covering the internal walls

Fig. 4.34: Stone masonry for foundations

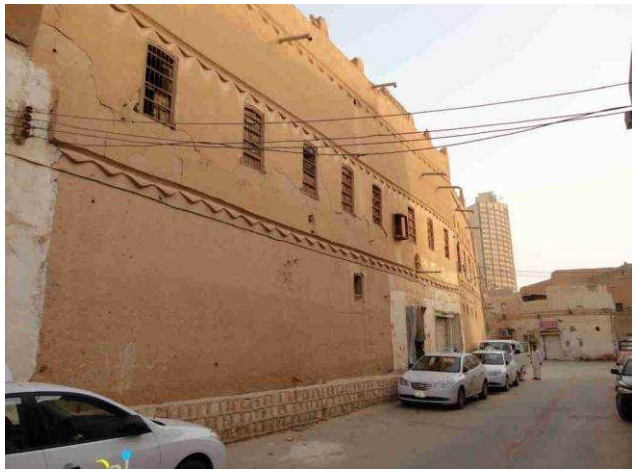


Fig. 4.35: Timber for doors and windows

a. Traditional door

b. Traditional window

4.4 House Design Regulations

This part of the study explores the house design regulations and their impact on contemporary form and layout. The Riyadh Municipality terms these regulations as the *Technical Requirements for Obtaining Permission to Set-up Villas and Residential Buildings*.

The courtyard house was not built to any regulations. The household and a master builder were the only people involved in the construction of this traditional house form (Bahammam, 1998). However, with the coming of the grid pattern street plan and detached villa house, new building regulations were introduced. They were used in developing a new neighbourhood in Riyadh city called "Al-Malaz", to provide accommodation for government employees who were transferring from Mecca to Riyadh between 1953 and 1957 (Al-Hathloul, 1981). This is considered to be the first contemporary neighbourhood in which the regulations were applied to control the height of the buildings, the ratio of building size to site area and to establish setbacks.

The grid pattern of streets and the villa as the new house type, both became models for developments that took place in the 1960s in every city in Saudi Arabia (Al-Hathloul, 1981). The introduction of the regulations meant that the Al-Malaz neighbourhood plan and the model of house design were reproduced all over the country, regardless of climate and location (Al-Said, 2003). This was due to two main reasons. First, Al-Malaz was built by the government, and reflects its vision on how a modern neighbourhood should be designed. Secondly, this neighbourhood was seen as a symbol of modernity, and the only project to use new materials and techniques (Al-Hathloul, 1981).

The street layouts were undertaken by the municipality, while purchasers of the sites were obliged to abide by the regulations. Nevertheless, they are very few in number (Bahammam, 1992); (see Table 4.1 and Figure 4.35a).

By the late 1960s, Riyadh, as well as other municipal town planning offices in Saudi Arabia, had enforced these regulations for the construction of all new private homes Al-Said, 2003). The mandatory setbacks on all sides isolate the house in the middle of the plot and expose windows and external spaces to the neighbours. This, in turn, has a negative impact on the privacy of the household. Thus, the setbacks become unused spaces as outdoor activities move inside the house to maintain privacy (Al-Nowiser, 1996).

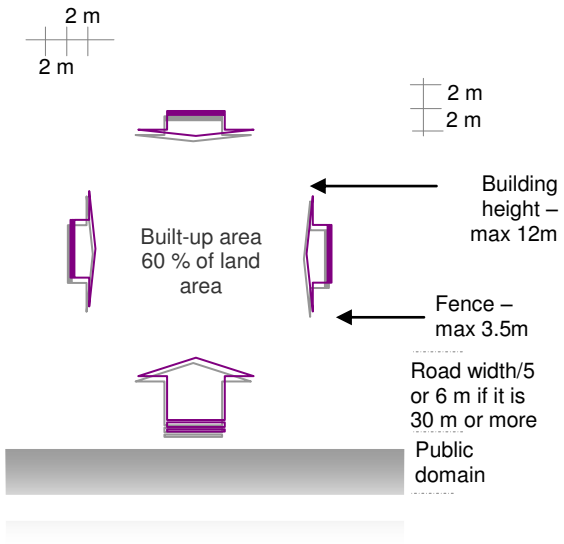
Although the prime purpose of setbacks is to provide natural light, air and views (Al-Nowiser, 1996), most of these imposed regulations have been rejected by the residents because of their implications on lifestyle. They erect high concrete fences and seal off the first floor windows. Women, in particular, respond by not using the yards, and driving instead of walking to school and mosque (Al-Hemaidi, 2001).

Table 4.1: Building regulations principles

Height of buildings	Max 12m (floor height 2.7m–3.5m)
Height of fences	Max 3.5m
Ratio of building size to site area	Max 60% (included annex)
Setbacks towards road (Road width – min 12m)	1/5th of road width up to 6m (min 2m)
Setbacks towards neighbours	Min 2m (projection should not be permitted within these areas)

(Source: MOMRA, 2007)

Fig. 4.35a: Building regulations principles



4.5 Villa home in Central Province

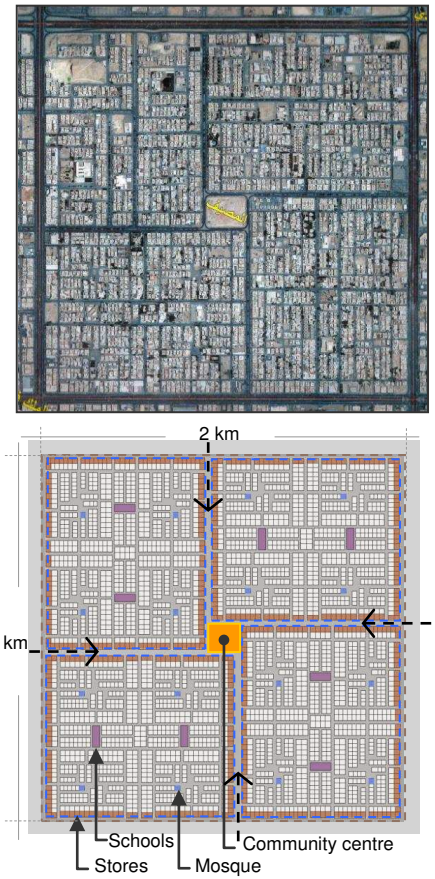
4.5.1 Introduction

The new concept of planning – the grid pattern and detached villa houses – were introduced for the first time to the eastern province by the Arab-American Oil Company (ARAMCO), with car-oriented, wide and straight streets, rectangular blocks and square plots, with a low population and land-use density (Eben-Saleh, 1998a). Although they were introduced to the Eastern Province, subsequent developments have been almost exclusively in the Central Province.

Eben-Saleh (2001, p.183) describes the contemporary neighbourhood as planned around a peripheral road and subdivided into sub-neighbourhoods by major roads that intersect in the centre, forming an area that comprises all necessary community facilities, like shopping, schools, police, post office. Each sub-neighbourhood has detached houses, public schools, a Jami mosque, and public gardens attached to mosques (see Figure 4.36).

A villa is a free-standing concrete dwelling of two stories on a large square plot, about 25 by 25 m. The concept of the villa's orientation is quite the opposite to that of the traditional courtyard house. While the courtyard house is inward looking, all the villa's openings are oriented outwards to the front, back and side yards (Al-Hathloul, 1981, p.165). In this context, Talib (1984, p.127) notes that the "alien building codes", as he calls them, were imported to provide light from all four sides, as well as to separate the house from adjacent houses. This arrangement produces setbacks that result in "a box-like structure sitting in the middle of a walled compound". Similarly,

Fig 4.36: The typical layout of a residential neighbourhood



An aerial view of a residential neighbourhood

Eben-Saleh (2001, p.185) states that: "The layout of a typical model [villa home] is characterised by the imposition of setbacks [in the] planning regulations, creating an island building design". According to Talib (1984), the villa house in Saudi Arabia is derived from an international style, and is not based on the real lifestyle and present needs of Saudis. Bahammam (1998) is also of the opinion that the villa house does not respond to the immediate needs of the Saudi household, but is a modern building that reflects a collection of new technical requirements prepared by the city's municipality. The villa house now constitutes the highest number of single-family dwellings in Riyadh (Al-Hemaidi, 2001).

4.5.2 Human needs

4.5.2.1 Climatic comfort

According to the current *Technical Requirements for Obtaining Permission to Set-up Villas and Residential Buildings* (Ar-Riyadh Municipality, 2007), contemporary built environments suffer from a number of problems, including lack of response to the arid climate. The provision of setbacks on all sides exposes the whole building to the sun (Talib, 1984; Eben-Saleh, 2001); (see Figure 4.37) which, in turn, necessitates the constant use of air-conditioning throughout the day and night (Al-Nowaiser, 1996, p.102). He further notes that, while the main purpose of the setbacks is to provide light, air and views, the existing mandatory setbacks expose most of the external and internal spaces of the house to its neighbours, with long windows facing each other. This means that house windows cannot be opened in most cases (see Figure 4.38). As a result, health problems are starting to appear among the residents, because of the dark interiors and the inability to use poor quality outdoor spaces (Al-Nowaiser, 1996; Eben-Saleh, 2001). Due to the mandatory setbacks, the contemporary dwelling has lost its inward-

Fig. 4.37: Setback provision exposes the whole building to the sun

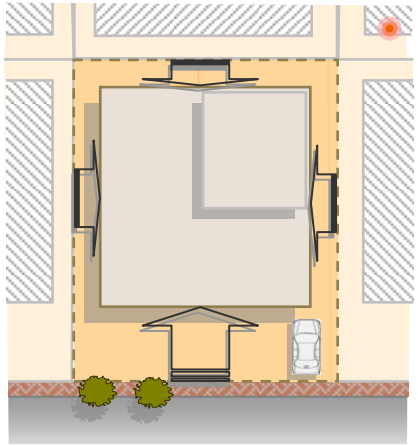
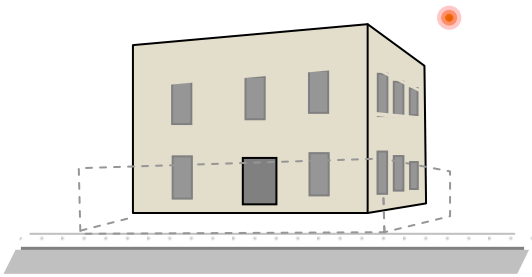


Fig. 4.38: Windows do not function as a source for air and light because of the setbacks



facing character and is exposed to direct sunlight (Moustapha et al., 1985) and sandy winds (Talib, 1984). Consequently, since the beginning of the 1990s, the technical requirements stipulate the provision of thermal insulation. The negative impact of climate on the contemporary villa house has been given little consideration: "glass and concrete led to the penetration of the sun's hot rays, blocked cooling winds and allowed overexposure of large areas" (Eben-Saleh, 1998a, p.583).

4.5.2.2 Safety and security

Newman (1995) states four elements of physical design that contribute, separately or together, to the creation of secured environments. Firstly, there should be a clear hierarchical definition of territories, from public to semi-public, semi-private to private. Secondly, the positioning of doors and windows needs to provide natural surveillance opportunities over entrances and open areas. Next, building forms and materials should be selected that do not imply that the residents are vulnerable. Lastly, residential developments should be located in areas where residents do not feel threatened.

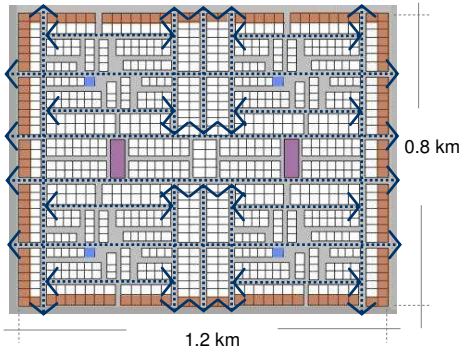
Poyner (1983) points out that most crimes in domestic property are opportunistic. Others like Waller (1978) and Maguire (1982) emphasise that the urban fabric has a more significant effect on the crime level than other factors such as genetics, child rearing and education. A study on the human and built environment illustrates that theft is considered one of the biggest concerns of residential neighbourhoods in Riyadh city (Al-Nowaiser, 2010). In this context, Al-Nowaiser (2001) argues that the urban planning of a contemporary (grid-pattern) neighbourhood in Saudi Arabia, with wide and straight streets leads to increases in vulnerability to crime; it makes it easy for criminals to wander through neighbourhoods and select their targets without being noticed. He further adds that the weakness of the social fabric contributes to weakened liveability and a downturn in surveillance by the community. The physical arrangement of open spaces does not support residents in monitoring and controlling actions by strangers and criminals (Eben-Saleh, 1999).

Modern urban developments are car-oriented, and demonstrate an acute separation between dwellings and other uses and functions (Eben-Saleh, 1998a). The current layout of neighbourhood streets facilitates fast traffic while discouraging pedestrian movement. This factor, as well as the lack of hierarchy in open spaces (public, semi-public, semi-private) reduces outdoor social activities, weakens the interaction between residents and their communities, and makes inhabitants feel insecure (Mubarak, 1992; Akbar, 1982; Al-Hemaidi, 2001; Eben-Saleh, 2001); (see Figures 4.39a and b).

As a result of the lack of safety and security in contemporary neighbourhoods, Al-Nowaiser (2001) indicates that some residents have been prompted to seek some protective measures in different ways, such as living in a family/relatives block or gated communities, or by fortifying their houses with fencing walls three to six metres high and using a metal mesh to cover windows and balconies (see Figure 4.40), as well as steel doors, in order to provide family safety and house security. Despite all these provisions, it is reported that, "crime still occurs at increasing rates" (Al-Nowaiser, 2001, p.57). Unfortunately, as indicated by Al-Hathloul (1981), others seek to sue their neighbours to force them to refrain from opening windows overlooking them, which has resulted in a social controversy. Interestingly, as indicated by Al-Nowaiser (2001), Saudi Arabia is still considered as having one of the lowest homicide rates worldwide, because of the severe punishment of execution for murder and violent crimes in the Islamic religion.

Fig. 4.39: The layout of the neighbourhood – grid pattern – is oriented for automobile, discourages pedestrian. Lack of hierarchy in open spaces

a. The prototype plan of residential neighbourhood



b. Sub-neighbourhood – automobile movement

Fig. 4.40: Fortifying houses for safety and security needs

Bahammam (2000) concludes that a lot of design criteria that contribute to the reduction of crime have been neglected to be applied in the majority of neighbour-hoods in the contemporary city of Riyadh.

4.5.2.3 Privacy

Ethnographers like Altman and Gauvain (1981), Lawrence (1982) and Goffman (1959) argue that the arrangement of a space in the residential built environment, expresses many binary oppositions like male and female, public and private. As indicated by Abu-Gazzeh (1995), houses are commonly formed to meet the users' culture-bound need for segregation. The privacy issue in the villa-type house has been questioned through a number of studies. Due to the existing mandatory setbacks on all sides of the plot, most of the internal and external spaces of a house are exposed to its neighbours (Al-Nowaiser, 1996); (see Figure 4.41).

The villa house has lost the inward-looking feature of traditional houses and is exposed to public view (Moustapha et al., 1985). Windows, instead of opening towards a courtyard, now open towards the exterior and provide less privacy (Talib, 1984). As a result, inhabitants rarely open their windows, particularly in the bedrooms and living room (Al-Hemaidi, 2001), (see Figure 4.42). Due to its visual exposure to surrounding neighbours, the use of the villa's open space between the house and boundary walls is limited (Al-Hussayen, 1995; Eben-Saleh, 1997). The lack of privacy has prompted villa residents not to use outdoor spaces for family activities, and has forced most outdoor activities to take place indoors (Al-Nowaiser, 1996; Al-Hemaidi, 2001). This problem can require modifications to be made to the original design (Eben-Saleh, 2001). As Abu-Gazzeh (1995) notes, "there is frequently remodeling or redefining of space, often at personal expense, that differs from the concept of the original architect" (p.101).

Consequently, occupants treat this problem in different ways. Living within a communal residential enclave, or family and relatives block is one option. However, most residents have raised party and boundary walls, up to six metres, and blocked off windows and balconies (Al-Nowaiser, 1996); (see Figures 4.43a, b and c), while others close the curtains of some or all rooms all the time, to the point that some people sometimes forget the existence of the window in that room, and others rarely open it. This, in turn, prevents light and air entering and creates dark and gloomy environments. It may thereby cause some diseases and mental health problems (Al-Nowaiser, 2010). In addition, other residents seek to introduce metal screens around the villa and external windows, in order to permanently protect the indoor and the outdoor spaces from the outside (Al-Hemaidi, 2001; Eben-Saleh, 2001).

Fig. 4.41: A house layout showing the influence of the setbacks on the privacy need

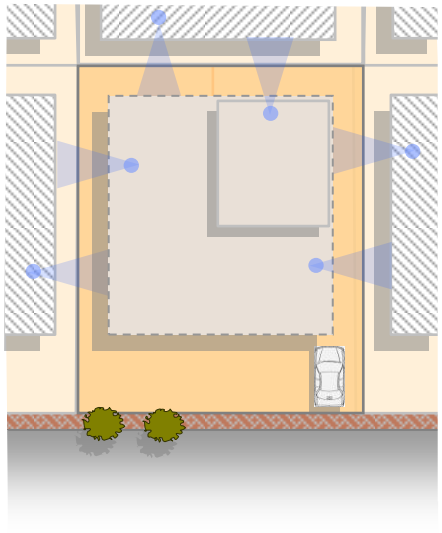
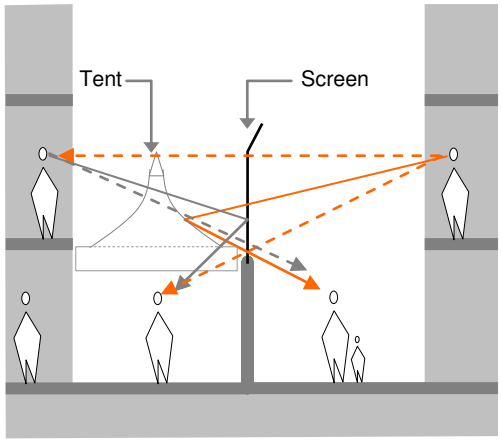


Fig. 4.42: Windows are facing bedrooms and living room

Fig. 4.43: Different solutions to protect family privacy

a. Raising party wall by using metal screen

b. Blocking windows by using aluminium shutters



c. A section through the setbacks between neighbours, showing the lack of privacy and how people tend to protect it

4.5.2.4 Status

The concept of a villa house seems to prompt and dominate the way in which occupants perceive themselves and are observed by others (Montgomery, 1975). Home can be seen as a dynamic dialectic process between individuals and their community (Altman and Gauvain, 1981). Bahammam (1998, p.568) argues that due to two factors – its size and its appearance – the contemporary villa has become a "symbol of status, of achievement, and of social acceptance to many Saudi residents". "It has come to symbolize prosperity, status and access" (Mubarak, 2007, p.5).

As the national economy improved, due to oil production, residents started to try out modern building materials and design styles that they considered to be part of a higher social status (Mubarak, 2007). While it is difficult to identify a rich traditional house from a humble one, new houses are a total contrast, where the exterior display of facades and exposure to the outside are almost ostentatious and beginning to become a concern (Eben-Saleh, 2001). Saudi people tend to use excessive decoration in their houses, internally as well as externally, as a desire to display their newly acquired wealth (Al-Ibrahim, 1990), (see Figures 4.44a and b).

Eben-Saleh (1998a) points out that Saudi residents have been influenced by European and American lifestyles; they want the sort of houses they see in the media, with gorgeous furnishings and all the benefits of 20th century technology. Accordingly, in Saudi society, owning a villa has been considered a social symbol that reflects the status of the household (Al-Naim, 2006).

Fig. 4.44: Using excessive and exotic decoration for status need

a. Using roof tiles and GRC decorations

b. Using marble tiles in different colours and mix of different features of decoration

4.5.2.5 External appearance

The detached villa has an emphasis on external appearance as well as the size of the building (Bahammam, 1998, p.568). Villa owners add balconies and large windows to give their houses an attractive appearance (Eben-Saleh, 1998a, p.583), (see Figures 4.45 and 4.46). On the other hand, other owners view the house as a source of investment; therefore, they attempt to build an attractive house in terms of design and size that is able to bring in more buyers, and can be sold for a higher profit. As a result, there is a great temptation to produce large contemporary villas to meet market demand (Bahammam, 1998, p.568).

Eben-Saleh (1997) concludes that because of the extreme desire for a unique external appearance, many architects ignore other residents' needs like privacy and climatic comfort; for instance, they include balconies and large windows in the design, regardless of the negative impact of intrusions.

Fig. 4.45: Using balconies for external appearance need

Fig. 4.46: Using large windows to enhance the external appearance

4.5.3 Place

Five aspects relative to place will be investigated: attachment, identity, symbolism, location, and environment, as follows:

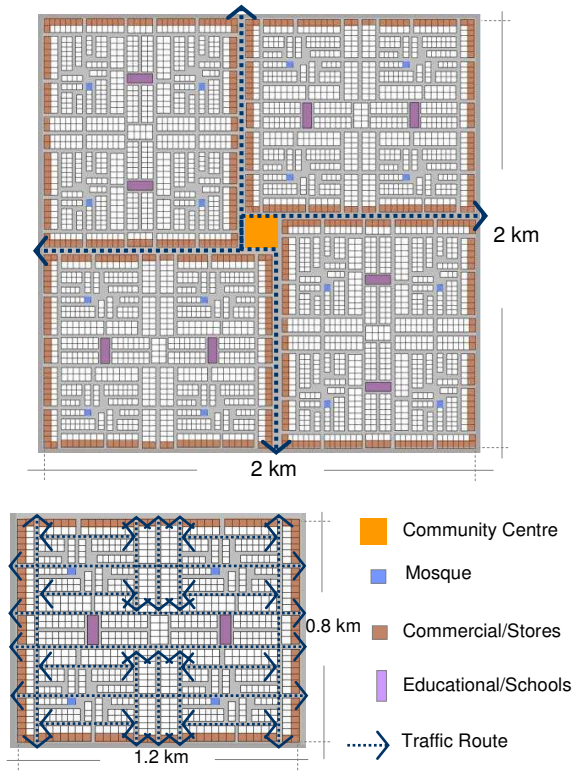
4.5.3.1 Attachment

While the fabric of a traditional neighbourhood is organic and pedestrian-oriented, that of a contemporary neighbourhood is geometric and vehicle-oriented. This has negative implications for semi-public and semi-private domains that play a significant role in linking people with their environments; instead of private, semi-private, semi-public and public spaces, the urban spaces in contemporary residential neighbourhoods are only private

(the house), semi-public (e.g. schools), and public (the streets). The semi-private spaces, *baraha* and cul-de-sac streets, which function as spatial links, have disappeared (Eben-Saleh, 1997, p.174).

Al-Nowaiser (1985) argues that, due to the absence of the semi-private spaces as well as the lack of pedestrian facilities in contemporary neighbourhoods – the "Instrumental Places", as he calls them – people have fewer opportunities to be involved with their built environments (see Figure 4.47). Thus, their sense of attachment is weakened, i.e. communal activities like children's play and social gatherings have moved inside the private domain of the house. Furthermore, due to several factors such as the separation of dwellings because of the setbacks, the lack of social/cultural spaces, the large sizes of plots and high boundary walls, Al-Nowaiser (1996) Eben-Saleh (1998a) criticise the existing regulations for depriving residents of social interaction, thus weakening their emotional ties and attachments to their environments. As Al-Nowaiser (1985, p.6) points out, "in this case, the environment is used as a medium for people's activities in terms of speed and economy efficiency". Consequently, residents tend to increase the size of their dwellings in order to accommodate various activities such as children's play, and areas for men and women to gather, in the form of play areas, gardens and annex rooms for teenagers (Al-Nowaiser, 1996).

Fig. 4.47: A layout of a neighbourhood showing the lack of the semi-private spaces and pedestrian facilities



Due to the increased number of rooms as well as the total area of the house, Akpinar (1992) criticises the villa style for contributing to segregating household members and reduced potential for social interaction, by which it has weakened the sense of belonging.

4.5.3.2 Identity

Place identity is the outcome of an integration of environment and culture (Tuan, 1974). According to Eben-Saleh (1998a), the contemporary urban fabric of the neighbourhoods does not reflect cultural identity. It is composed of several physical characteristics and different social and economic environments. The design of a place should meet the requirements of physical and social conditions, which in turn produce a visual image that may carry appropriate place identity (Eben-Saleh, 1998b).

While the features of the traditional built environment include spatial qualities rooted in a cultural and environmental situation, in the contemporary built environment spatial features are produced by the recent phenomena of individualism and materialism (Al-Nowaiser, 1985). One of the weaknesses in contemporary planning of residential neighbourhoods is the lack of coordination between old and new urban settings; as Eben-Saleh (1998b, p.156) puts it, the "misconception of assimilation" (Eben-Saleh, 1998b, p.156).

In the same context, Al-Hathlul and Mughal (1999) suggest that, due to modernisation, with advances in modern technology, a common phenomenon of standardisation of built environments can be seen all over the country that prevents its residents from accessing their cultural, regional and national identity. Al-Naim (2008) points out that the villa style has the ability to present a personal identity due to the individuality of the design, e.g. the ability of providing different elevations and forms with a variety of features and building materials. This, in turn, contributes to its rising popularity in Saudi society. Further, he asserts that the attitude towards modern forms and appearance constitutes a communication tool for residents to engage with modernity.

Despite this notion, Saudi households tend to employ internal and external alterations in order to adapt their villas, which can create a contradictory image in the contemporary environment (Bahammam, 1992). Al-But'hie (1996) criticises contemporary houses for being culturally and socially empty due to the exotic exterior design and interior furnishings. Residents aspire to have modern technology, which may impact on their identity (Eben-Saleh, 1998a).

4.5.3.3 Symbolism

The built form of a house and the pattern of the neighbourhood have fundamental roles

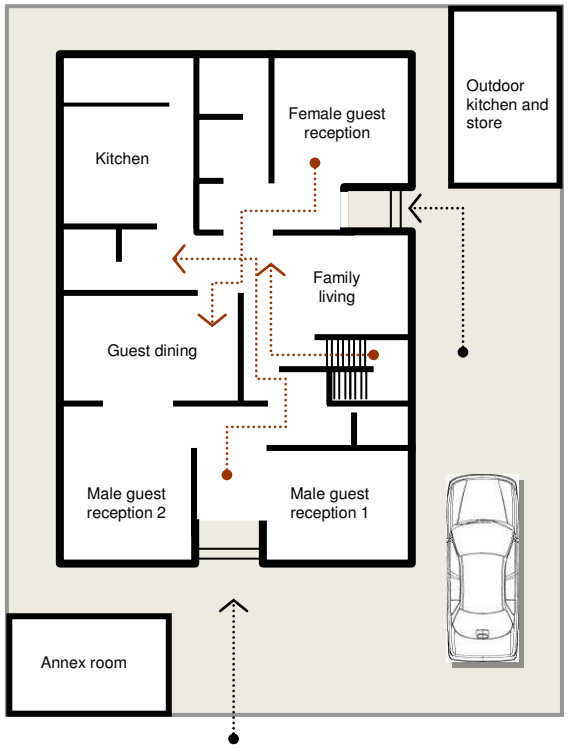
in expressing particular spatial symbols, which reflect occupants' cultural norms and environmental context. However, in the contemporary built environment, inauthentic places relying on mobility and commercialisation have resulted in the weakening of the role of the house in this context. Thus, it has lost any deep symbolic association (Al-Nowaiser, 1985).

Meanings in architecture emerge from the interaction between people and physical objects. However, in modern built environments, lifestyle requirements change over time. This means that the significance of the physical form may change; for example, the meaning of the kitchen has switched from a functional space for cooking to a place associated with family living, which may also be open to visitors (Al-Naim, 2008).

According to Al-Nowaiser (1985, p.11), people have become less attached to their built environments. Thus, their involvement and experience is weakened. This will affect the sense of place symbolism, i.e. "the spatial elements of the physical environment in the dwelling and within the urban form symbolise the major activities that occur in them".

Al-Nowaiser (1996) identifies the grid-pattern system as the prime reason for moving most of what used to be communal activities inside the house, causing a negative impact on core familial activities. The courtyard space plays a significant role in creating different meanings linked with different family activities, such as gathering and celebrating, as well as being a play area for children (Bahammam, 1996). However, in the villa house, the courtyard is replaced by a family living space on the ground floor, which partially functions as a circulation space, thereby losing its main role as a family space in which different activities can be undertaken (Talib, 1984); (see Figure 4.48).

Fig. 4.48: The layout of a house shows the position of the family living as a circulation space



In addition, having a separate room for each member of the family which includes modern communication technologies – compared to the courtyard house where each room has a multi-use function – in turn alters spatial experiences for individuals (Al-Nowaiser, 1985).

4.5.3.4 Location

The contemporary grid-pattern system has been criticised because it neglects the differentiation in topography (Al-Hathloul, 1996). As illustrated by Al-Nowaiser (1985, p.6), while the traditional built environment falls under the definition of a substantive place – "its qualities include spatial features rooted in the cultural (social, religious, traditional norms) and environmental (climate, topographical) systems" – the contemporary built environment falls under the definition of an instrumental place, where development mostly follows market forces and technology, which, in turn, emphasise access and speed with an orientation toward materialistic fulfilment.

Since the 1960s, as pointed out by Al-Hathloul (1981) and Al-Hemaidi (2001), the villa-house model constitutes the only single-family dwelling that has been introduced to all cities and towns in Saudi Arabia, regardless of geographical differences. In this context, Al-Nowaiser (1996, p.97) classifies the existing *Technical Requirements* (Ar-Riyadh Municipality, 2007) including zoning by function as a “fixed” type of planning control. He observed its "rigidity, deterministic nature, and lack of response to changing uses and trends". It does not differentiate between locations and tends to segregate residents of different income levels. This limits the opportunity to achieve environmental equality in the built environment.

4.5.3.5 Environment

The grid-pattern system of contemporary neighbourhoods, with wide streets ranging from 10 to 30 m in width, has resulted in a decrease in the spatial relationship between the private environment (the house) and the public environment (the street) (Eben-Saleh, 1998a). This has a negative impact on residents, encouraging them to drive, instead of walking to schools, mosques and shops (Al-Hemaidi, 2001). In this context, stressing the role of the car, Al-Nowaiser (1996) adds that the grid-pattern system reserves almost the entire plot frontage of houses for vehicle entrances and parking. Further, he emphasises the negative influence of the setback regulations on isolating the interior environment of a house from the outdoor spaces, resulting in dependence on artificial interior climate control.

4.5.4 House

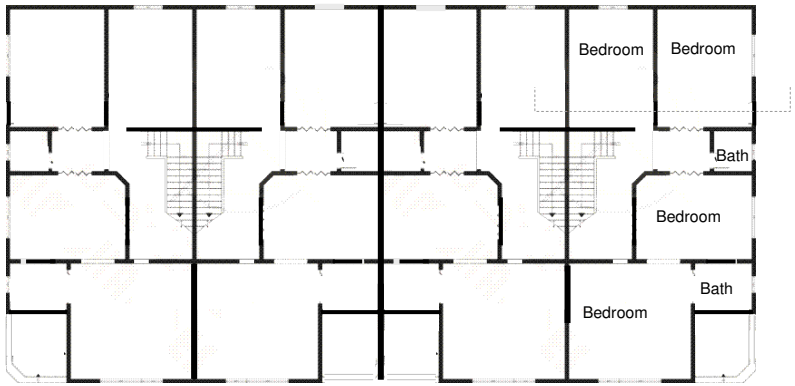
Five aspects relating to the villa as house are: types, threshold, internal arrangement, nature of spaces, and materials and construction.

4.5.4.1 House types

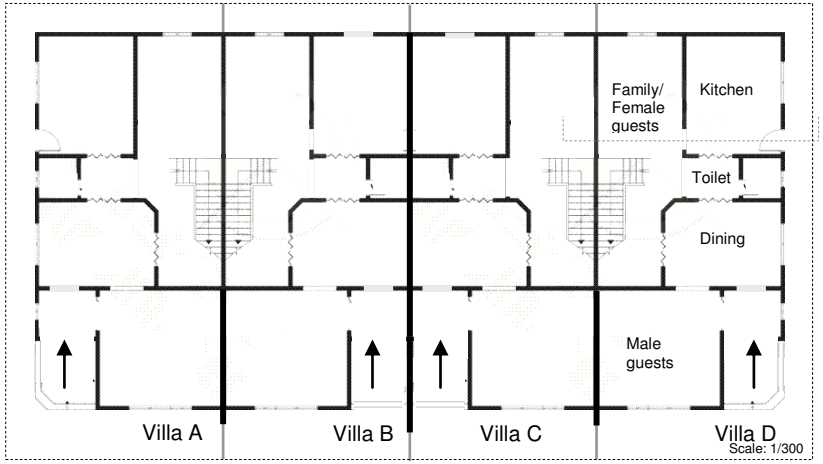
Based on the existing *Technical Requirements* (Ar-Riyadh Municipality, 2007), four different villa-house types were identified: detached, attached on one side, and two varieties of attached on two sides (see Figure 4.49 a, b, c and d). However, attachment of houses is only available where they are all owned by the same owner at the time of construction; i.e. one person or one's relatives, or a property developer. Consequently, detached dwellings are the most common type (Eben-Saleh, 2001, p.185; Bahammam, 1998; Mubarak, 2007).

Figure 4.49: Villa house – the four different types

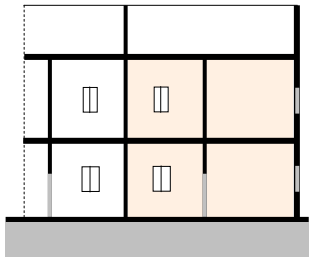
c. Attached on two sides



First Floor



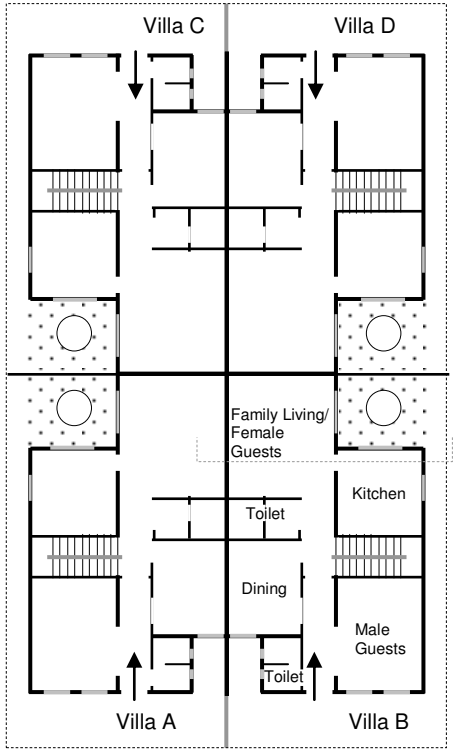
Ground Floor



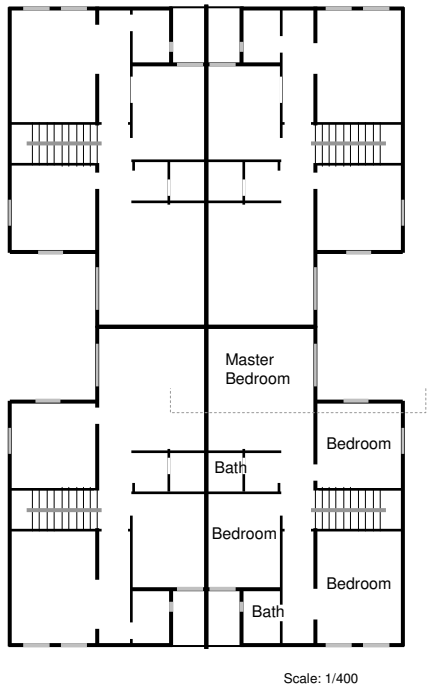
Cross-section

Elevation

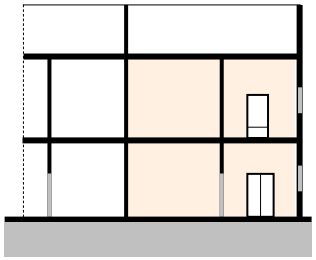
d. Attached on two sides



Ground Floor



First Floor



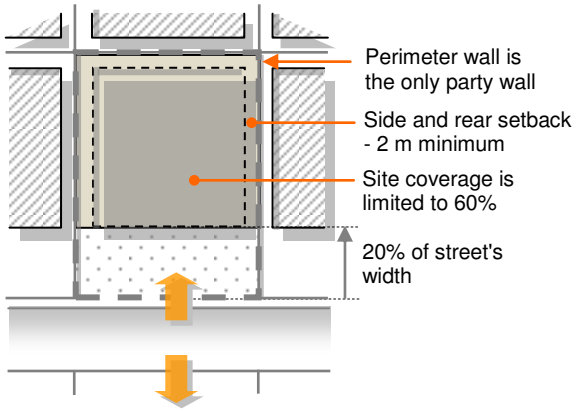
Cross-section

Elevation

As identified by Al-Hemaidi (2001) and Bahammam (1998), the villa house is a free-standing concrete dwelling of two stories, built according to the setback requirements on all four sides: a minimum of two metres at the back and sides, and 20 per cent of the street's width at the front. The site coverage is limited to 60 per cent of the site area (see Figure 4.50). Abo-Sulaiman (2005; cited in Bahammam, 2011, p. 169) points out that the average area of residential plots is 720 m^2, while the vast majority of the plots possess an area in excess of 500 m^2. Further, he illustrates that the majority of plots are 25m in width and 30m in depth.

While the courtyard house is directed inwards, villa houses are oriented outwards, towards the front, back and side yards. The villa house is "a detached house built within a garden compound and surrounded by a high wall" (Mubarak, 2007, p.5). According to some sources, the main purpose of the setbacks is to provide natural light and ventilation as well as a view through the windows, constructed all around the building (Al-Ibrahim, 1990; Eben-Saleh, 2001; Al-Nowaiser, 1996). Al-Hemaidi (2001, p.193) argues that house setbacks actually create unusable spaces: "they have destroyed the features of open spaces between the buildings". Setbacks create dead spaces as they are unable to support women's activities, due to their lack of privacy (Al-Nowaiser, 1996). On the other hand, four characteristics are distinctive to the detached villa: a separate entrance; no shared spaces with neighbours; no party walls with adjacent houses (see Figure 4.50); and the plot is owned independently (Bahammam, 2011).

Fig. 4.50: A detached house – setbacks and coverage limitation



4.5.4.2 Threshold

Based on the existing regulations of the front setback, the house threshold constitutes the separation line between the public domain of the street and the private domain of the house.

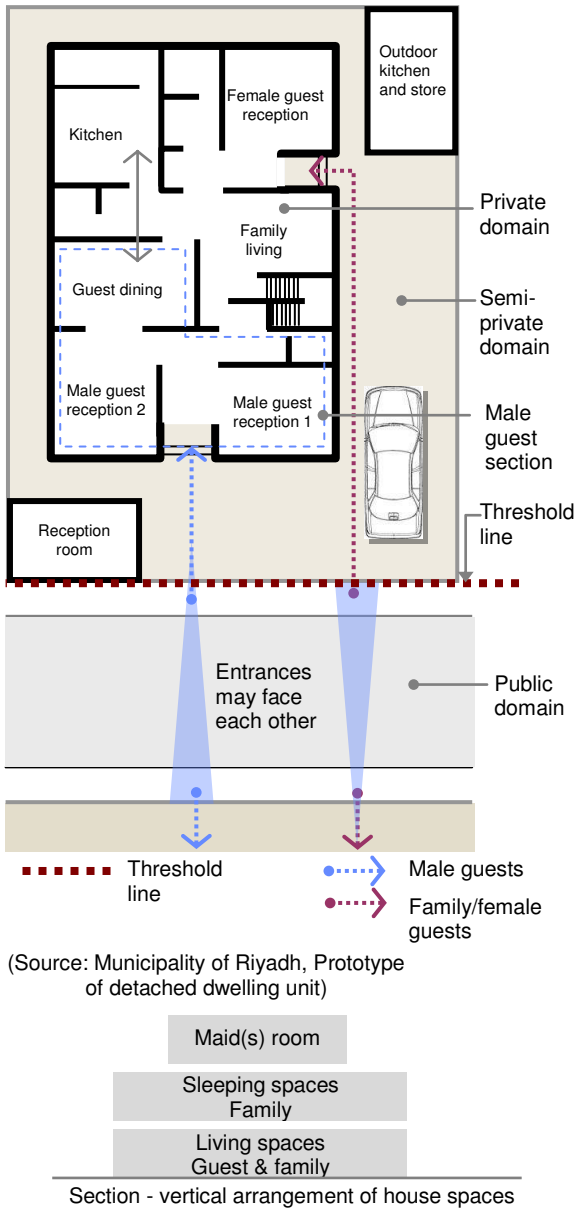
However, Eben-Saleh (1998a) evaluates the front yard, as well as the back and side yards, as semi-private spaces, as they are exposed to adjacent buildings. Almost the entire plot frontage is reserved for family cars' entrances and parking (Al-Nowaiser, 1996). Al-Hathloul (1981) points out that, while the entrances of courtyard houses are small in size and rarely face each other, in the villa house, entrances are bigger in size and number (2–3 entrances), and may face each other, which negatively influences the use of the front yard for family activities (see Figure 4.51).

4.5.4.3 Internal arrangement

The arrangement of spaces in a villa is almost uniform all over the city. The male guest part of the house, incorporating reception rooms, dining room and toilet are towards the front of the house close to the male entrance and open onto the front yard. The location of the kitchen enables direct and easy serving (see Figure 4.51). Bedrooms are usually located at the back of the house or on the upper floor (Al-Hussayen, 1980; as cited in Al-Hemaidi, 1996, p.207). In addition, an extra room, with a bathroom, has been added for maid(s) at roof level (Bahammam, 1996, p.566). In the front yard, an annex is incorporated as a reception room for the male teenagers of the family. There is another room and bathroom for the family chauffeur, which are normally located adjacent to the boundary wall with access from outside the front boundary of the plot (Bahammam, 1996).

The family living space is located in the heart of the house on the ground floor, and acts as a circulation space to other rooms. This space plays a significant role as a congregating and communication place for the family members (Talib, 1984).

Fig 4.51: House threshold and internal arrangement



(Source: Municipality of Riyadh, Prototype of detached dwelling unit)

4.5.4.4 Nature of spaces

Each space is designed to meet a specific function, and therefore has to be fitted with particular furniture. This explains the absence of multiple uses of rooms in the villa house, compared to the multi-function rooms in the courtyard house (Bahammam, 1998). Further, he points out that many villa houses have two or more male guest reception rooms, as well as dining room(s); and the female guest reception room(s), with an average size of 24.4 m^2 for each space. In the male reception rooms, one is furnished with western-style furniture, while the other is furnished in the traditional style. The western-style reception room is reserved for official events. Interestingly, the area of the male guest section may be more than 200 m^2 (see Figure 4.52).

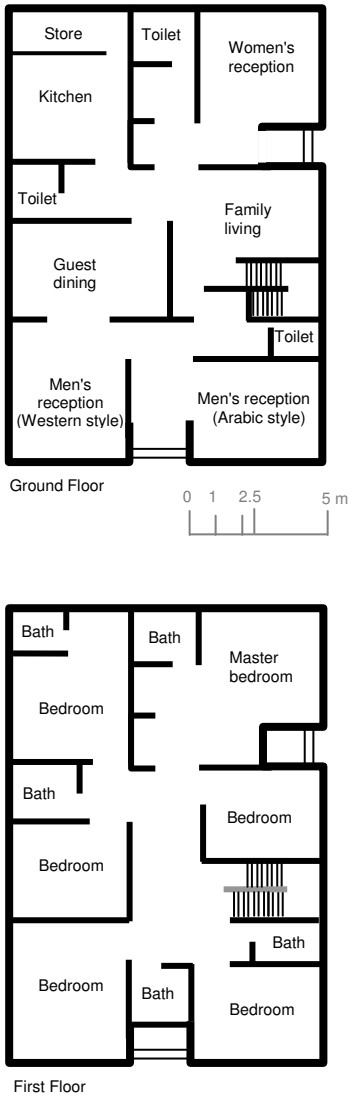
Due to the lack of external spatial opportunities for communal activities, villas have increased in size to accommodate various activities such as children's play areas, recreational rooms, and separate living rooms for formal and informal gatherings of men and women (Al-Nowaiser, 1996).

The duplication of spaces has resulted in the creation of very large buildings, with particular furniture used for a limited number of functions and events (Bahammam, 1998). In terms of the outdoor spaces, a number of sources assert that they constitute unusable and dead spaces, being exposed directly to the climate as well as to neighbours (Al-Hemaidi, 2001; Al-Nowaiser, 1996; Talib, 1984).

4.5.4.5 Materials and construction

Villa houses are built in a diversity of imported, non-natural and exotic modern building materials and construction methods (Bahammam, 1998; Mubarak, 2004) including: concrete blocks, terrazzo

Fig. 4.52: Villa house – the nature of spaces



tiles, glass (Eben-Saleh, 1998a), and aluminium (Talib, 1984). Cement-based products contribute to producing modern dwellings which are compatible with present-day standards such as multiple electrical fixtures and numbers of sanitary fittings (Mubarak, 2007).

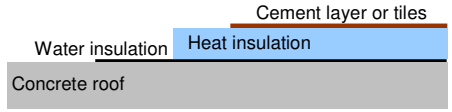
Furthermore, concrete construction methods offer considerable potential for variable volumes, long spans and applied decoration (Mubarak, 2007). They use the conventional frame building system of columns and beams, which can produce large spaces (Bahammam, 1998). Contemporary construction techniques make it possible to mass produce concrete blocks (Mubarak, 2004), and speed up the building process, thereby meeting the increasing demand for modern dwellings (Bahammam, 1998).

For external as well as internal walls, hollow concrete blocks are used, but with no sufficient thermal resistance or insulating capacities. For this reason, cavity walls are employed for external walls with insulation boards of 5 to 7.5 cm. Recently, hollow clay blocks, with better insulating capacity, have been used for external walls (see Figure 4.53). In terms of the roof, it is constructed in a lightweight slab built with either lightweight concrete or hollow clay blocks, and covered with insulation boards 10 to 15 cm thick. The final finish consists of sand and cement screed, or tiles (Talib, 1984), see Figure 4.54).

Due to the mechanical process of production, concrete blocks have more uniform quality, higher compressive strength, accept a variety of finishes and are cheaper to buy and erect compared with the traditional sun-baked mud brick. Concrete block walls conduct more heat than mud walls, and are more resistant to rain. Compared with concrete blocks, oven-baked clay blocks can offer sufficient strength and durability coupled with higher insulation value (Al-Ibrahim, 1990).

Fig. 4.53: Cement and hollow clay blocks with heat insulation for external walls

Fig. 4.54: Roof structure – reinforced concrete integrated with blocks



4.6 Summary

Historically, the tent and the courtyard house have been the two types of family dwelling in Saudi Arabia. Both are designed to reflect the culture of Saudi society, which is influenced by hospitality and the provision of family privacy. This is evident in the design of the tent and courtyard house, which are divided into two or three sections, one of them reserved for male guests, entirely separated from the family section. In terms of materials used to create the tent, it exhibits a clear dependence on natural materials that are readily available, local and inexpensive. It is also characterised by its propensity to adapt to climate changes and its ability to provide an appropriate environment for its occupants. The use of natural materials contributes significantly to the emphasis of the identity of those who dwell in it and strengthens their sense of belonging to their environment. The provision of security and safety is taken into account at the level of the community as well as at the single residential unit. Tents are grouped and organised in a circular shape, which helps in identifying strangers and encourages residents to exercise mutual surveillance.

The concept of the courtyard home dates back thousands of years. It has been used in multiple forms and names by different cultures, for socio-cultural and climatic purposes. The courtyard house has been used by Muslims as an aid in protecting the privacy of occupants, as well as being suitable for a hot, arid climate. The courtyard is usually located in the centre of the house, surrounded by the rest of the rooms of the house, whose doors and windows open on to it. It has the ability to enhance contact with the surrounding environment and provide natural lighting and ventilation. It also plays an active role in strengthening family ties through the provision of adequate space for various family activities, thereby enhancing the sense of belonging to that particular place. In terms of building materials, it demonstrates a clear dependence on natural materials that are readily available, local and inexpensive.

In contrast, the villa home expresses an alien form, and unfamiliar construction methods and building materials. It has no contact with the environment. The effect of climate is given little consideration; it is outward-oriented with dependence on electrical solutions for providing climatic comfort. Socio-cultural aspects like privacy and security are underestimated, while status and external appearance are given more importance. Emotional ties and attachments between residents and their environment are weakened; it enhances individualism.

Methodology

Ch.1 Introduction

Ch.2 Home: Notion and Fundamental Principles

Ch.3 Home and the influence of the Islamic culture

Ch.4 Historical development of domestic accommodation

Chapter 5

Ch.6 Data Collection

Ch.7 The Proposition: A Design Guide

Ch.8 Conclusion & Contribution

Chapter 5: **Methodology**

5.1 Introduction

In the previous chapters, and during a review of the related literature, three main issues have been addressed: first, home: notion and fundamental principles; second, home and the influence of culture; third, the nature of house styles: courtyard and villa. Thus, the conclusions can be summarised as follows:

a. Home is more than just a physical object: it is a three-dimensional notion which combines the object itself with the place, as well as residents' needs.
b. Islamic culture has a significant influence on shaping the Saudi family residence, which matches the principles of home, while emphasising some of the issues, such as privacy.
c. Both the courtyard and villa house have positive as well as negative characteristics relating to the principles of home.

Based on the final perception of home, three principles will be investigated. First, residents' needs and their satisfaction or dissatisfaction with regard to both courtyard and villa houses. Second, to what extent courtyard and villa houses respond to the places in which they are situated. Thirdly, house design.

Each research design – qualitative, quantitative or mixed methods – is associated with different strategies (Creswell, 2009) and research methodologies (Mertens, 1998). Moreover, each strategy is associated with one or more research methods such as interviews, questionnaires, observation or the use of documents (Creswell, 2009). In order to obtain data for mapping out a social environment as well as a physical one, survey methods are suitable for collecting factual data about a large number of people (Denscombe, 2010). Other methodologies such as experimentation, which aim to compare characteristics and associations between specific factors in a controlled environment, are not appropriate for the purposes of this study (Denscombe, 2010).

In order to investigate human needs, both quantitative and qualitative methods were employed; although, to elicit residents' opinions, views, attitudes, preferences, etc., the large number of respondents enabled the answers to be quantified. Qualitative methods, such as interviews, can be used to examine day-to-day interactions and the meaning of situations for the people involved (Lapan et al., 2012). They can be used to study people's

lives, lived experiences, behaviour and feelings (Corbin and Strauss, 1998). Initially, there was a notion it would be useful to observe how family members interact with their homes. However, this might have constituted an invasion of privacy and, therefore, semi-structured interviews were selected to examine the nature of place.

To assess the house types, courtyard and villa house designs need to be analysed. Design drawings help to "map out such things as thought processes or sets of social interactions", and are seen as a non-text based method, where the issues to be investigated are presented as illustrations (Mason, 2002, p.104; Denscombe, 2010). Consequently, the quantitative method (survey questionnaires), as well as qualitative methods (interviews and interpretation of drawings) are employed in this research in order to investigate the key elements of home.

5.1.1 Questionnaires

The questionnaire is a highly structured data collection technique through which respondents are asked the same set of questions (Gray, 2009). It seeks information on residents' preferences with regard to their houses (Denscombe, 2010), and investigates the level of a household's satisfaction or dissatisfaction. A variety of responses can be used, such as a Likert scale, choosing from a list of options, and ranking options in order (Denscombe, 2010). A closed-ended, open-ended or combination questionnaire can be used (Dawson, 2009). However, due to the need for consistent analysis of the results, the closed-ended question type was proposed, in which all possible answers were included. A five-point Likert scale was applied for most of the questions; it provides pre-coded data that can be easily analysed. Choosing from a list of options and ranking order types were also selected where appropriate.

As for the development of the questionnaires, four issues are taken into consideration: the source of questions, developing specific and appropriate questions, evaluating questions, and the structure of the final questionnaire (De Vaus, 1996). The questionnaire structure and style should be set up in a way that satisfies enables the respondents to give clear answers (Gray, 2009). Accordingly, the design of the questionnaire passed through several steps of development and evaluation, in order to achieve a final layout. Questions were designed to cover the five issues of residents' needs: climatic comfort, safety of the family and security of belongings, privacy, status, and external appearance. Some questions were designed to highlight whether the residents had introduced any changes to their homes. The aim in finalising the wording of the questions was to use simple and clear language, direct and short expressions, and no ambiguous or leading questions

(De Vaus, 1996). Accordingly, ten questions were developed, centred on issues such as residents' satisfaction and dissatisfaction, and physical alterations and/or additions made by users, which reflected the conflict between residents' needs and the design of the house in which they live. These changes also helped to specify particular users' needs and requirements that might have otherwise remained concealed. In addition to the questionnaire, an introductory letter was attached, including a range of information such as the purpose of the survey; the sponsor of the study; confidentiality and anonymity; and finally, thanking respondents for their participation.

5.1.2 Interviews

The potential use of interviews as a data collection method is more appropriate when they are employed to explore more complex phenomena (Denscombe, 2010). It is an adequate technique to obtain in-depth and detailed information about residents' feelings, emotions and experiences, and more precisely, to express why they have these views. By using this method, responses can be open-ended, and the interviewees have the chance to develop ideas and talk more widely about the questions raised by the interviewer. Face-to-face interviews enable direct and pre-arranged contact between the researcher and the respondents; thus, a very high response rate might be expected.

It was therefore decided to conduct semi-structured interviews with a number of selected heads of household, as identified in *5.1.6: Samples: size and selection*. Two stages of the interviews would be required for this study; the first phase of semi-structured interviews being conducted immediately after the analysis of the results of the questionnaires, due to some unexpected and contradictory results emerging from that stage. Face-to-face interviews with a sample of the original respondents were needed. The second phase is concerned with aspects of place: i.e. attachment, identity, symbolism, location and environment. Similar studies were reviewed in order to prepare a set of appropriate questions, which covered the five aspects of place. Each aspect was divided into two levels: first, at the level of the house environment and, second, at the level of the neighbourhood environment. The interview schedule consists of three key parts: the opening – introducing the objectives of the interview; the main body – the topics to be covered and potential questions; and closing – a summary of the main issues discussed, clarifying the next course of action to be taken and thanking the respondent for his or her time. Audio recording would be used where permission was granted. Taking notes, as well as writing them up as soon as possible, would be carried out for each interview (Willis, 2006). Obtaining informed consent from all participants would be expressly carried out

(Denscombe, 2010), and confidentiality and anonymity of the interviewees guaranteed (Mason, 2002).

5.1.3 Observation schedules

The house as an object, or as “lived spaces tend[s] to be things with which people interact". Thus, it is considered as “lived visual data” (Emmison, Smith and Mayall, 2012, p.152). Further, they point out that, to study such types of data, direct observation has been found to be the most appropriate technique. In this context, they refer to the first study conducted by Bourdieu (1990), decoding a house using illustrations (architects' drawings), where he studied the relationship between house arrangement and a set of homologous oppositions, such as day and night, and male and female. Also Halle (1993) used the method of direct observation and data from architects' drawings to examine the different classes of housing in the New York region.

Accordingly, an observation schedule would be devised, containing five elements related to house: i.e. types, threshold, internal arrangement, nature of spaces, building materials and construction. The architects' drawings of the different house styles – courtyard and villa – would be used as lived visual data, and issues relevant to house represented in a visual form. A physical measurement and analysis of the design layouts would be applied to the floor plans and sections, by using a variety of tools. In addition, an in-depth description by the head of the household, with the aim of understanding the various social and cultural arrangements along with their relationships to the physical characteristics of the residence, would be sought.

However, this technique of data collection has several difficulties, such as availability of and access to the architects' drawings, which inevitably requires their authorisation (Denscombe, 2010). Sometimes, the required drawings are unavailable, inaccessible or simply lost (Flick, 2009). For this reason, the researcher would be required to prepare some architectural drawings which are missing.

5.1.4 Ethical Issues

Two key issues were considered from the beginning, as well as throughout the process, of the data collection stage: access and ethics. The ability to collect the kind of data needed for the research, people and documents, depends on the ability to access it. Surveys, among other social research, raise a set of ethical issues about "confidentiality, informed consent, anonymity, secrecy, being truthful and the desirability of the research" (Blaxter, Hughes and Tight, 2006, p.158). For this reason, it is essential to obtain signed formal consent from all people who are involved in the different phases of data collection in this research: questionnaires,

interviews and observation. It is usual for some people to decline to cooperate; therefore, sending invitation letters and consent forms prior to the time of conducting the interviews is important.

5.1.5 Population

The target population is the set of elements needed by a researcher in order to ensure reliable outcomes from the study (Daniel, 2012). Based on the aim of this study, the target population of the survey is the total number of Saudi households in Riyadh City.

5.1.6 Samples: size and selection

The main purpose of sampling is to produce rigorous outcomes without the need to gather data from every member of the population (Denscombe, 2010). The definition of the sample is either representative (large sample) or exploratory (small sample). As Fowler (2009) notes, the representativeness of the sample is affected by three criteria: first, comprehensiveness: how comprehensively it covers the target population; second, the probability of selection: does every unit in the research population have an equal probability of being chosen? And finally, efficiency: excluding those residences that do not belong to the target population. Based on the mixed-methods approach in this study, the sampling for quantitative data would be representative, whereas the sampling for qualitative data would be exploratory.

According to a survey study conducted by Arriyadh Development Authority (ADA) (2009), the number of single-family houses reached 455,000 for villas and 155,000 for courtyards in Riyadh City. Based on these statistics, which have a 95% level of confidence and 5% margin of error, sample sizes have been determined using a web-based sample size calculator (Creative Research Systems, 2013). The resulting sample size for villa households is 384, and for courtyard households, 375. However, it was decided to round up the sample size for each type of house to 400 (see Figure 5.1). For the interview sampling, 40 heads of household (10% of the main sample) from each house type (courtyard and villa) would be selected.

The variation in house type is very limited, with no more than four types for each style, i.e. courtyard and villa. Moreover, one type of each style numerically dominates the other three. It was therefore decided that a sample of one dominant type in each case would suffice (see Figures 5.2 and 5.3). According to the Arriyadh Development Authority (ADA, 2011), 25 traditional districts (comprising courtyard houses) are occupied by Saudi households and a mix of single Asian labourers.

Fig. 5.1: A map of Riyadh city locates districts from which samples were selected

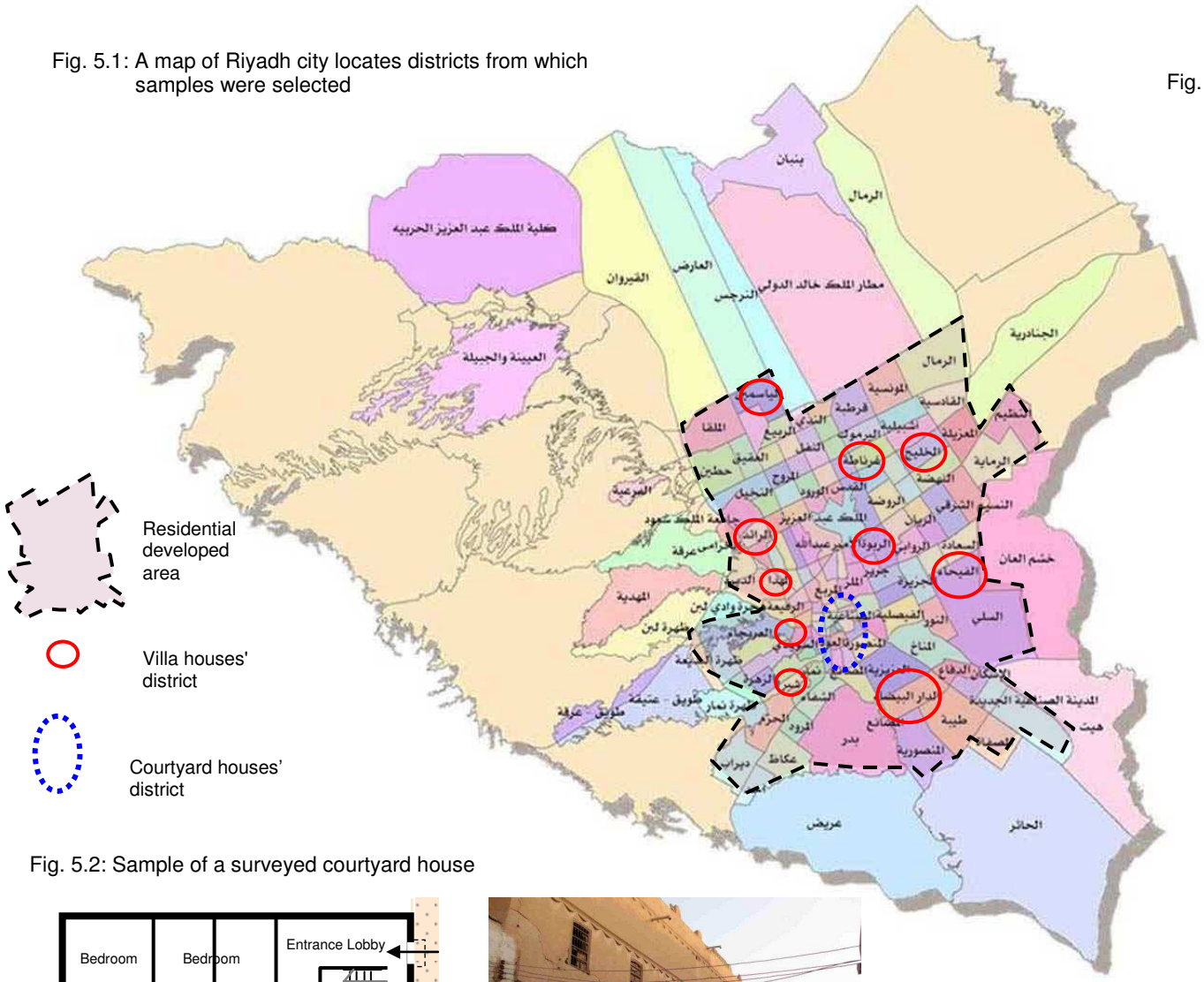
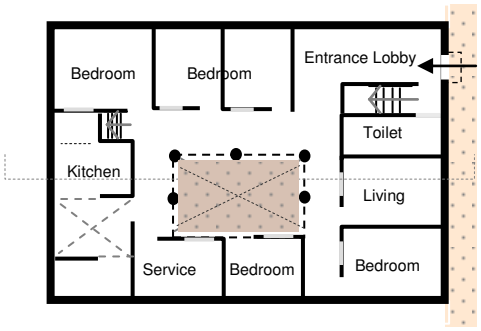


Fig. 5.2: Sample of a surveyed courtyard house



Ground Floor

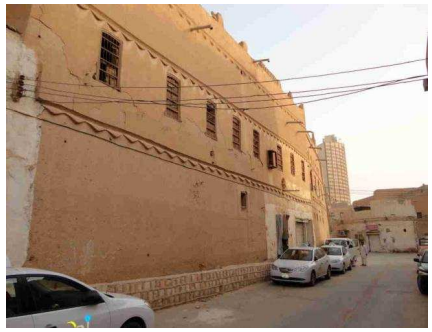
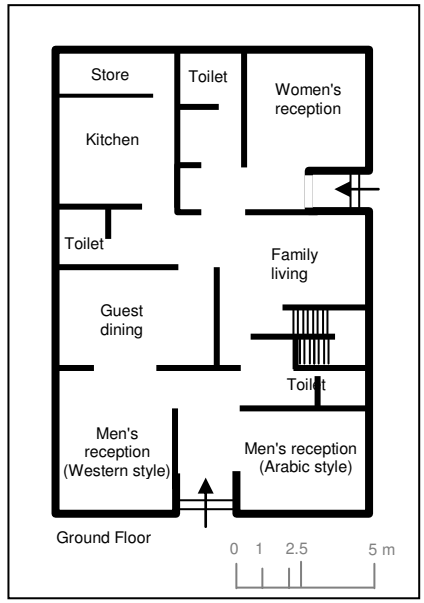


Fig. 5.3: Sample of a surveyed villa house



As the focus of this survey is about houses inhabited by single Saudi families, the study was narrowed down to ten districts only, where Saudi families are concentrated, all of which are included in the study sample. Accordingly, in order to ensure uniformity among the study samples, it was decided that ten contemporary districts – for villa houses – from a total of 114 residential districts would be selected in a random manner; i.e. every household in the population of interest having an equal chance of being chosen for this study. Therefore, a multi-stage selection process was used to obtain the final sample. This technique involved randomly selecting several different samples: dividing districts into blocks, and then dividing blocks into houses, where each house represented one household. As for the sample in the contemporary districts containing the villa houses, a sampling frame of all districts would be prepared and a simple random sampling technique used to select a sample of ten districts. After acquiring a complete sampling frame for all districts in Riyadh City, four steps would then be followed. First, each district would be given a unique number, starting from 1 and ending with the total number of districts (114). Second, to select a sample of ten districts, ten numbers would be selected at random from a table of district numbers. Since the highest identifying number on the sampling frame is a three-digit number, it was decided to select ten numbers that consist of three digits from a table of random numbers. However, all numbers in the table of random numbers had five digits. So, it was decided to select the first three digits of the five in each case. Finally, the ten districts which correspond to the randomly chosen numbers would be chosen. Each of the selected districts would be divided into blocks using up-to-date aerial photos, collected from the planning department in the Arriyadh Development Authority. Each block comprises 8–16 houses, and five blocks – embracing 40 houses in total – would be chosen following the previous four steps. Having designated five blocks, similarly, a list of houses within the selected blocks would be drawn up, and following the same four steps above, a random sample of 40 houses would be selected.

5.2 Fieldwork

5.2.1 Preliminary phase of survey

This stage was conducted between July 21 and August 8, 2012. The main objectives were, first, to observe in-depth the current situation of the two different house types – courtyard and villa – and record their external appearance with photographs. Second, to undertake a pilot study, to test the questions prepared for the questionnaires within the sample areas. Third, to identify the obstacles and problems that the researcher might face

during the main survey, and to determine the right solutions for them. Fourth, to talk with some residents in order to obtain their initial approval for conducting the main survey. However, the overall objective was to gain the trust of people, and to build a network with the residents for the main stage of the survey.

5.2.2 Pilot study

Piloting is the process whereby the researcher tests the different techniques of data collection and how they work in practice (Blaxter, Hughes and Tight, 2006). Piloting a questionnaire, as suggested by Gray (2009, p.340), helps in eliminating misleading questions. De Vaus (1996) refers to the importance of evaluating each question and the questionnaire as a whole after the completion of the questionnaire development. Piloting the questionnaire is useful, to be aware of the time needed to complete it, as well as discovering any comments on the wording (Denscombe, 2010). The pilot study was conducted with 18 heads of households (Dawson, 2009). Prior to this study, the questions were given to three university students to read through to see if there were any ambiguities that had not been noticed. As a result of the pilot study, some minor adjustments were made to a number of questions, such as adding more clarification and splitting specific questions into two parts to avoid confusion.

5.2.3 Main phase of data collection

This stage was divided into three phases – questionnaires, interviews and observation – as follows.

5.2.3.1 Questionnaire distribution

This phase was undertaken in December 2012, when 800 questionnaires were distributed among 20 districts, with 40 questionnaires per district. The face-to-face technique was used to ensure a high rate of response. However, as this was more time-consuming, it was decided to invite ten volunteers (university architectural students) to help administer the survey. Thus, every volunteer covered two districts with 80 questionnaires in total. Each questionnaire required ten minutes on average to be completed; thus, seven hours were spent on each district, making a total of 140 hours.

Every volunteer in this survey was briefed on the objectives of this study, and received training on how to fill in the questionnaire and deal with respondents, including adhering to the ethics of the research, e.g. ensuring confidentiality and anonymity of information and individuals. During the process of administering the questionnaires, 23 of the households which had already been selected were either not at home or refused to participate for some reason. The pre-determined research strategy was to select the first household next door on the right; if they were unable or unwilling to participate, then the one to

the left was asked to do so, and so on. It is worth pointing out that every questionnaire was allocated a number and location; thus, it was easy to link the results of each questionnaire with a specific district.

5.2.3.2 Semi-structured Interviews

This phase, as noted previously, was divided into two stages:

a. First stage of interviews

The purpose of the first stage was related to the questionnaires' results being either unanticipated or conflicting with each other. For instant, in villa houses, a number of respondents expressed their satisfaction about their family privacy, despite the fact that they had added screens over the party walls all around their houses. It was not clear from their answers if that feeling was caused by these screens or because of other reasons. In the courtyard houses, a number of residents expressed their dissatisfaction regarding climatic comfort, which was unexpected by the researcher. To deal with this issue, it was important for semi-structured interviews to be conducted with a percentage of those households. Identifying the size of the sample was the first step, and the total number of these cases was determined; for those in courtyard houses, it was 132 – almost one-third – while for those in villa houses, it was 192 – almost 50%. It was decided to select 10% of 132 + 192, initially 13 courtyard households and 19 villa households. However, to achieve uniformity, it was decided to choose 20 households from each, by using the same strategy utilised to select the main sample. The structure of interview questions for villa house respondents centred on four issues: climatic comfort, safety, security and privacy. In contrast, it centred on just three issues for courtyard house respondents: climatic comfort, security and external appearance.

b. Second stage of interviews

This stage related to the investigation of place. As noted previously, it focused on five aspects: attachment, identity, symbolism, location and environment. Prior to starting the interviews, invitations were sent to 80 households – 10% of 400 + 400 for each house style. Of these, 67 accepted the invitation to participate in the interviews, while the researcher was unable to obtain a response from the remaining households. As a result, by using simple random sampling, 13 households were selected and sent invitations. All of these accepted the invitation to participate. The interviews were undertaken in August 2013.

Interviewees were cooperative and generous in the information they gave. The use of audio recording was not always accepted by the interviewees. Where this was the case, it was important to take extensive notes.

5.2.3.3 Data Analysis

Analysing data is the process by which it is possible to understand the results. Thus, one can say the aim of this phase is either describing its component elements, explaining how it works or interpreting what it means. In general, it aims to illustrate several issues such as: what the situation looks like; how often it happens, frequency, duration, etc; how things are connected; how and why things happen (Denscombe, 2010). As pointed out by Blaxter, Hughes and Tight (2006), this phase is divided into two interrelated processes: data management – simplifying and shortening its volume; and data analysis – deriving the most important issues.

The data collected were composed of both quantitative and qualitative data. As a result, different techniques were employed to make sense of these data.

a. Analysis of questionnaires

After the data were collected and arranged, five stages were carried out to analyse and present it. First, an SPSS (Statistical Package for Social Science) program was used, which enabled the researcher to input the collected data, modify and reorganise it, and carry out a wide range of statistical analysis, such as listing the frequencies of different responses and looking for patterns and correlation within the data. Second, mixed methods of quantitative analysis were employed; including descriptive statistics, variable frequencies and averages, in addition to multivariate analysis, studying the linkages between more than one variable. Thirdly, by using the Microsoft Excel and Word programs, data was presented in two forms, tables and charts, to convey the information graphically and obviate the need for extensive written interpretation.

b. Analysis of Interviews

Qualitative data analysis is primarily concerned with the analysis of speech, text and visual images. Five approaches deal with the analysis of qualitative data: content analysis, grounded theory, discourse analysis, conversation analysis and narrative analysis (Denscombe, 2010). The approach of grounded theory was applied, as it is mainly associated with the analysis of interview transcripts; and it represents a way in which the researcher is able to discover theories grounded in pragmatic data (Bernard and Ryan, 2010).

Qualitative data (interview transcripts) can be difficult to analyse (Denscombe, 2010). Therefore, data was prepared, organised, and stored in an appropriate way that made it amenable to analysis. First, interviews were transcribed into text; the audio recording was converted into a text format, which is easier to analyse. Next, annotation; different forms of informal

notes and comments that were taken either during or after the interviews were added to the text. Then, to be more familiar with the data – what was said – the transcripts were read and re-read. This, in turn, assisted the researcher in cross-referencing and enabling him to better understand the data in context, which resulted in the identification of a variety of themes within the data. Afterwards, and in order to connect elements of data to ideas that related to the analysis, data coding, in the sense of both indexing and categorising, was undertaken; labels in the format of initials and numbers (Denscombe, 2010), as well as marking the text through highlighting words, lines or paragraphs in different colours, were employed for this purpose (Bernard and Ryan, 2010).

The previous stages, as advised by a number of sources such as Blaxter, Hughes and Tight (2007), Denscombe (2010) and Mason (2002) can be applied by using the NVivo computer software package. While trying out this application, the researcher noted that the manual application provided more amenable results than the use of the computer program. So, the manual application was relied on for all stages of data analysis. Therefore, and in order to avoid potential errors for this procedure, the analysis was checked and re-checked at every stage. Finally, the last stage of analysing the data was to derive concepts through capturing the meanings contained within the data.

c. Analysis of Observation

To examine architects' drawings – floor plans and sections – a variety of techniques and tools were used. The size of a specific space or group of spaces was measured. The method of drawing sketches associated with annotations was employed as an appropriate means to clarify ambiguous issues. In order to compare between different elements (activities or sections), highlighting in different colours and line styles was undertaken. In some cases, there was a need to have rooms numbered and named and/or classified. Illustrations (photo-graphs) prepared previously by the researcher were added as required to give more explanation.

5.2.3.4 Propositions and Evaluation

Once the collected data was analysed, a final table was drawn to present the findings of each phase of data collection. Based on that table, design guidance covering 15 aspects related to home was prepared. The introduction focused on covering seven themes, including the purpose behind this work and the reasons that prompted it; the structure of the guide; similar examples; the scale of development and who should use the guide.

A consistent layout is the main feature adopted in the presentation of the booklet. The page layout is divided into two halves;

to the left, the current status, and to the right, the design guidance. The drawbacks are displayed first, followed by the positives of each style (courtyard and villa). To distinguish between the two styles, a circular shape was placed to the left of the text: a red one is associated with the courtyard and a blue one related to the villa. The guidance largely adopts a key strategy to take advantage of the positive features and avoid the negatives. Combining text and illustrations is applied as a theme in dealing with all aspects. Simple language and colours are applied in order to make it easier to use.

To evaluate the Guide, three different types of organisation with substantial experience in the issues were chosen, in order to discuss the propositions and receive their feedback. Educational institutions are represented by King Saud University and the University of al-Faisal; the professional practice of architecture is represented by the Saudi Council of Architects and Engineers; and finally, decision-making or government institutions, represented by the Ministry of Housing and the Municipality of the City of Riyadh.

One member of each university was named, then an early telephone conversation with them was undertaken to obtain their initial consent. A letter of invitation to participate in the evaluation, including the date, time and location of the interview, was sent to each. The Saudi Council of Architects and Engineers was contacted to arrange interviews: two offices of practitioners were proposed to be interviewed. Regarding the Municipality of the City of Riyadh and the Ministry of Housing, verbal consent for interviews with people involved was obtained prior to the interviews.

An interview schedule was prepared and tested before conducting the interviews. Audio recording was used in order to ensure all the details were captured.

Data Collection

Chapter 6: **Data Collection**

6.1 Introduction

The purpose of the survey was to obtain factual data as a means of confirming the principles discovered in the literature. However, the results show that residents in the courtyard houses are critical of some of their traditional advantages; whereas negative aspects of the villa houses are not particularly highlighted by respondents.

In terms of the courtyard houses, comfort in relation to the climate received a mixed response. Meteorological evidence shows that temperatures have become more extreme in recent years, and sandstorms have become more violent (Al-Hamzani, 2008; Al-Naser, 2009). Thus, it is conceivable that the houses perform less well as climatic modifiers than in the past. Some residents have introduced air-conditioning and covered the courtyards to increase protection from the climate. However, these changes affect the relationship between inside and outside, and can create other aspects of discomfort. Safety, security and the use of outdoor spaces were all reasonably well rated by respondents. Nevertheless, there is a notion that the high proportion of single male immigrants living in districts of courtyard houses is causing sufficient concern that these traditional benefits are not as overwhelmingly satisfied as in the past. Privacy has been the principal advantage of this house type, and it is still strongly supported by the residents for both indoor and outdoor spaces.

For the villa houses, there was relatively narrow positive support for comfort in relation to the climate, although there are some contradictory results. The essence of this house type is that it is divorced from the external environment. A significant number of the residents have increased the capacity of their air-conditioning units, and protected doors and windows. Some residents may feel that in objective terms, comfort has been improved but, for others, the lack of contact with the outdoors may be having adverse psychological effects. Nevertheless, the use of outdoor spaces produced modestly positive results. The quality of these spaces seems poor, but perhaps any contact with outside is better than none. There was a strongly positive response for safety and inside privacy, perhaps due to the modifications to the houses. The response for privacy outside was less positive, as residents may still feel susceptible to the gaze of others. Not surprisingly, status and external appearance were strongly supported.

Any supposition about the reasons for these results could be viewed as

speculation. It is therefore intended to undertake interviews with sample heads of households to discover the real underlying reasons.

Details of the survey results and their analysis are follows:

6.2 Human Needs

This part of the study covers the survey questionnaires that were conducted door-to-door in December 2012 with 800 heads of households living in courtyard and villa homes – 400 each – in order to investigate human needs aspects. First, results will be displayed as collected, followed by the analysis of those results.

6.2.1 Survey Results: Courtyard Home

The questionnaire was composed of eight statements based on residents' perceptions about the ability of their homes to meet their needs, and two additional questions about changes made by the residents, and which of their needs they were to enhance.

Statement 1: *Your home is comfortable in different climatic conditions.* This statement focused on the ability of the house to meet the need for climatic comfort. During hot conditions (40–50℃), the histogram in Figure 6.1a illustrates that 44% of respondents either agreed or strongly agreed with the statement. During cold conditions (0–10℃), Figure 6.1b shows that 40% of respondents either agreed or strongly agreed with the statement.

During rainy conditions, the histogram in (Figure 6.1c) illustrates that slightly less than two-thirds of the sample either disagreed or strongly disagreed with the statement.

Fig. 6.1a: House comfort in hot conditions

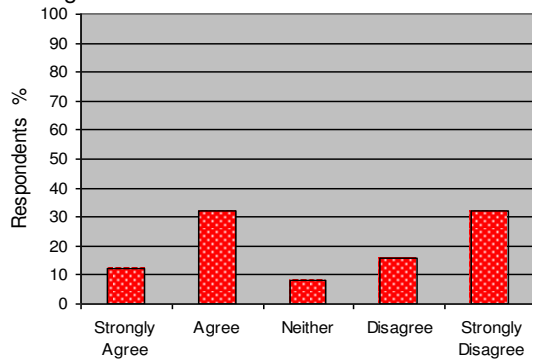


Fig. 6.1b: House comfort in cold conditions

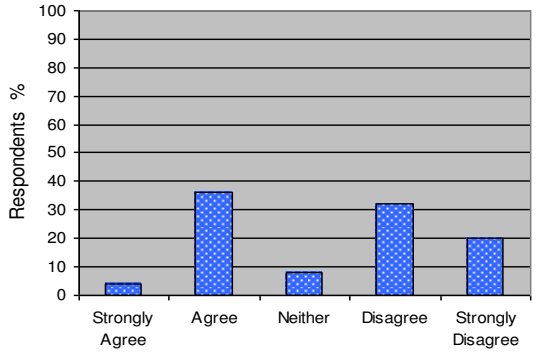
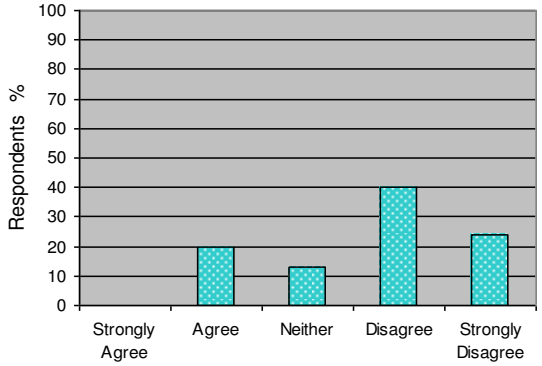


Fig. 6.1c: House comfort in rainy conditions



During sandstorm conditions, it can be seen from Figure 6.1d that no distinct view predominated.

Statement 2: *The outdoor spaces at your house are frequently used at any time*. It is apparent from Figure 6.2 that 60% of respondents either agreed or strongly agreed with the statement.

Statement 3: *You always feel safe in your house.* As can be seen in Figure 6.3, the histogram illustrates that 56% of respondents either agreed or strongly agreed with the statement, and none strongly disagreed.

Statement 4: *You are comfortable about security when you are not there.* As can be seen in Figure 6.4, the histogram illustrates that 52% of respondents agreed with the statement. Interestingly, none strongly agreed or disagreed.

Fig. 6.1d: House comfort in sandstorm conditions

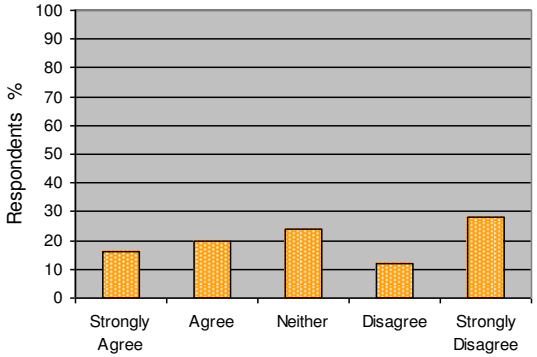


Fig.6.3: Responses about family safety in the house

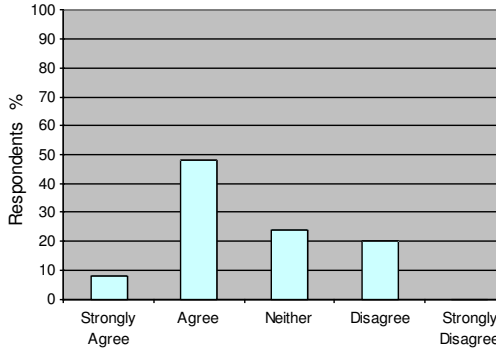


Fig.6.2: Responses about the use of outdoor spaces in the house

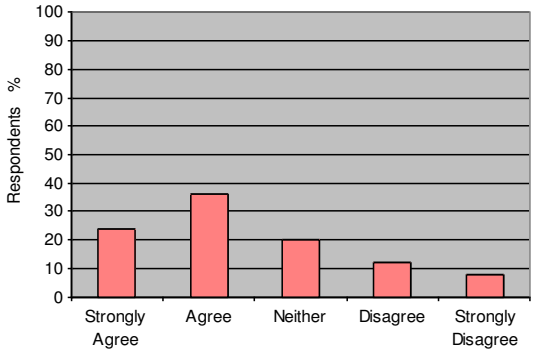
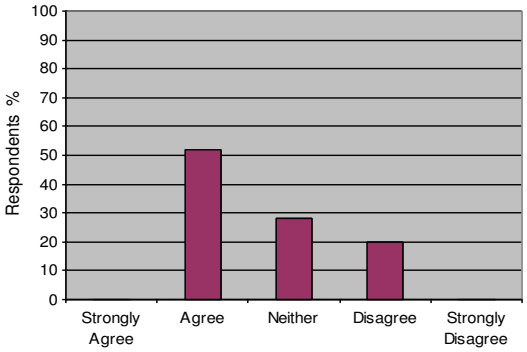


Fig.6.4: Responses about house security when no one is there



Statement 5: *Your family privacy from neighbours is maintained inside your home.* As shown in Figure 6.5, the histogram illustrates that 84% of respondents either agreed or strongly agreed with the statement.

Statement 6: *Your family privacy is maintained in the outdoor spaces of your home.* It can be seen from Figure 6.6 that 90% of the study sample either agreed or strongly agreed with the statement.

Statement 7: *You believe that your home status is very important to you.* It is apparent from Figure 6.7 that 51% of the sample either disagreed or strongly disagreed with the statement. However, the majority of responses were in the neither and disagree categories.

Statement 8: *You believe that the external appearance of your house is very important to you.* The histogram in Figure 6.8 shows that 32% of respondents either agreed or strongly agreed with the statement, but the overall picture is a normal distribution with no real preferences.

Fig.6.5: Responses about family privacy inside the house

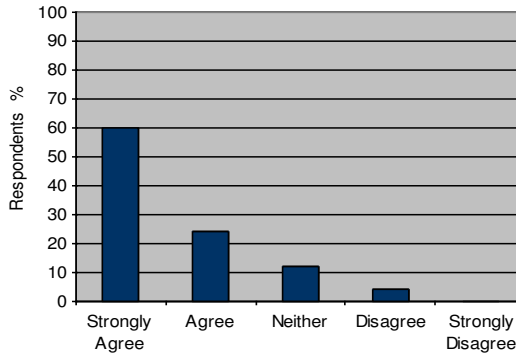


Fig.6.6: Responses about family privacy in the outdoor spaces

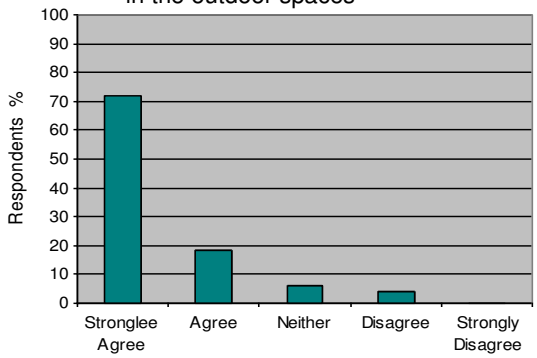


Fig.6.7: Responses about importance of house status.

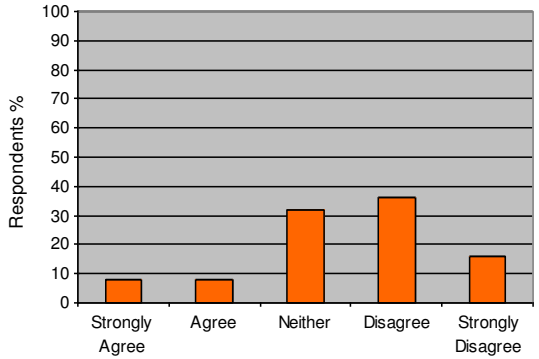
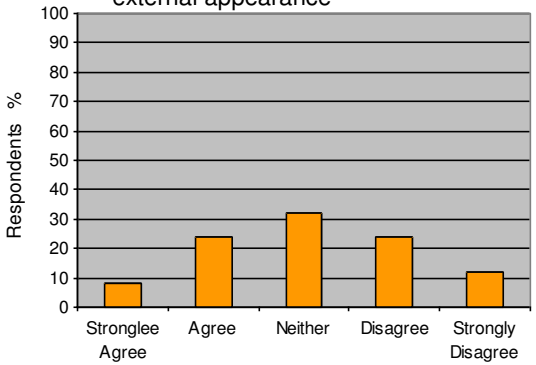


Fig.6.8: Responses about importance of external appearance



Question 9: *Have you made any changes or additions to your home?* This question is divided into two parts. The first part investigates any alterations and/or additions to the houses in order to improve comfort against the climate; achieve family safety; achieve security; or provide family privacy from neighbours. These are the only issues that can be improved by simple small-scale changes. The second part seeks to identify the type of alteration made. Seven choices, identified from the reviewed literature, were provided to be ticked where appropriate. The histogram in Figure 6.9 illustrates that 60% of respondents (240) had made alterations to mitigate against the climatic conditions, whereas only 8% (32) had been aiming to improve privacy. Data in Table 6.1 illustrates the various means – indoor and outdoor – used to improve or achieve each issue. To improve climatic comfort, three different means were used: adding air-conditioning units; renovating mud walls annually; and roofing the yard partially or completely. Interestingly, most of the respondents used the means of adding air-conditioning units to improve climate comfort in their houses, whereas renovating the mud walls appears as the second most used means. In terms of increasing apparent security, four methods were used: metal bars over windows; raising the fence/parapet; roofing the yard; and reducing the size of windows, either partially or fully blocking them. It is noted from Table 6.1 that the use of metal bars over windows was the most utilised means to achieve security, followed by roofing the yard. With regard to safety, three means were used: metal bars over windows; raising the parapet; and reducing the size of windows, either partially or fully blocked. Similarly, using metal bars over windows was the most used means to achieve safety, followed by reducing the size of windows. As for privacy, two means were used: reducing the size of windows – either partially or fully blocked – and raising the parapet, which is the most used means.

Fig.6.9: Alterations or additions have been made to improve: climate comfort, safety, security or privacy

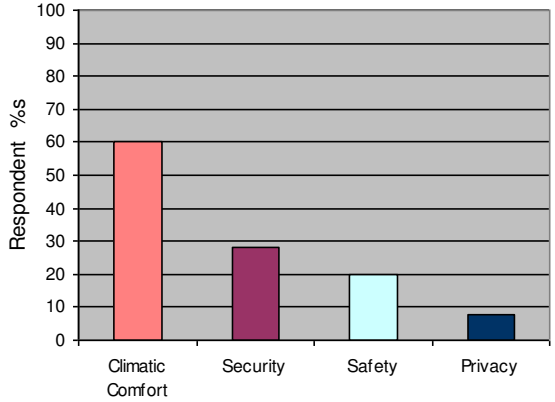


Table 6.1: Various means used to improve climatic comfort, security, safety and privacy

		Climatic comfort	Security	Safety	Privacy
Outdoor	Roof the yard	40	10	4	
	Raising the roof parapet		36		24
	Renovating mud walls annually	94			
Indoor	Alarm system				
	Metal bars over windows		48	49	
	Adding any kind of curtains to windows				
	Partially reducing the size of windows or blocking them		18	27	8
	Adding air-conditioning units	106			
	Total	240	112	80	32

Question 10: *From one to six, please rank the following for importance in your house, where one is the most important and six is the least.*

The final question in the questionnaire seeks to investigate residents' perceptions about the most important needs in their homes. The six issues relate to the hierarchy of human needs, i.e. climatic comfort, safety and security, privacy, status, and external appearance.

As can be seen in Figure 6.10a, the climatic comfort issue emerges as the most important need, whereas safety comes second, as shown in Figure 6.10b, followed by the need for security, as can be seen in Figure 6.10c. The need ranked fourth, as shown in Figure 6.10d, is the external appearance. The issue of privacy appears in Figure 6.10e in fifth place, followed by the issue of status as the least important (Figure 6.10f).

Fig.6.10a: The importance of climatic comfort

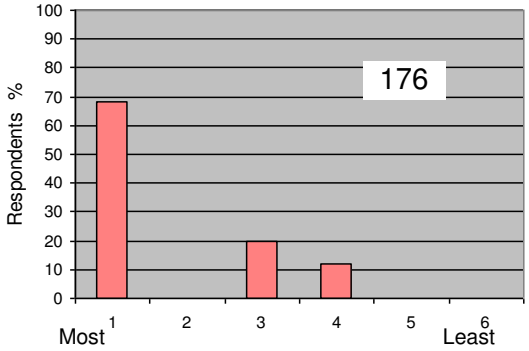


Fig.6.10b: The importance of safety

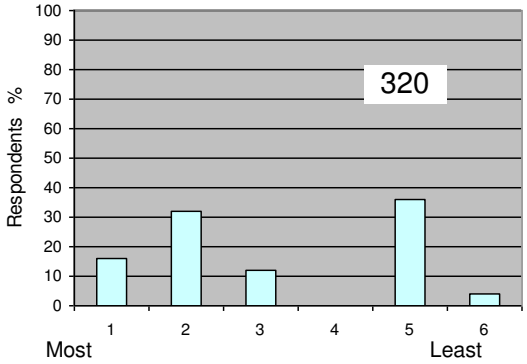


Fig.6.10c: The importance of security

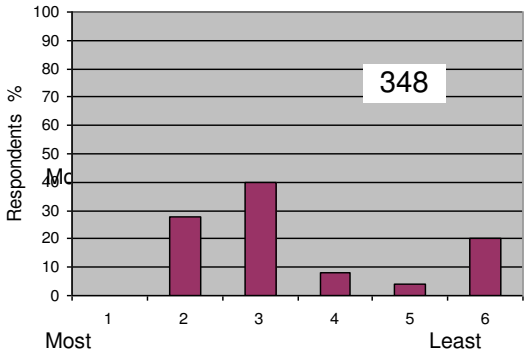


Fig.6.10d: The importance of external appearance

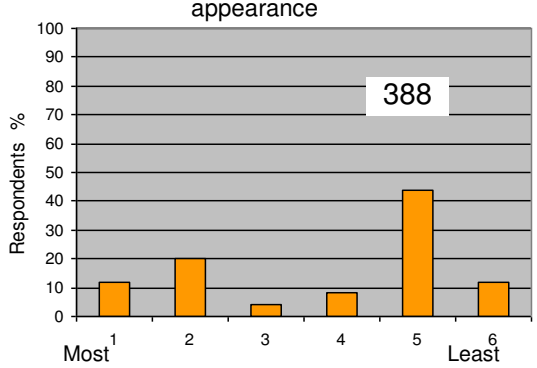


Fig.6.10e: The importance of privacy

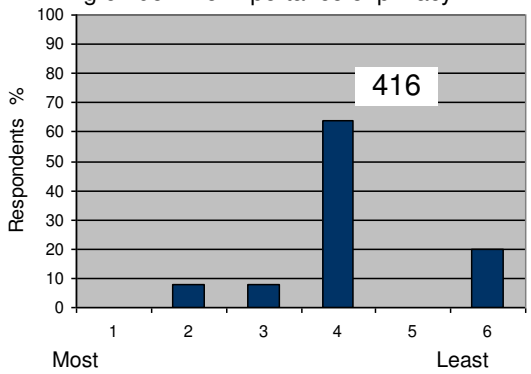
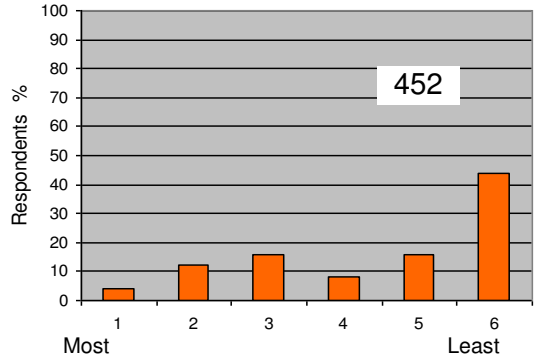


Fig.6.10f: The importance of status



6.2.2 Analysis of Survey Results: Courtyard Home

This part of the study seeks, in particular, to identify the relationship between people's satisfaction and adaptation of their houses by comparing the results of statements 1 to 6 with the results of question 9, and the ranking from question 10. To present the satisfaction and dissatisfaction of respondents, the Likert scale has been reduced to three points: e.g. for climatic comfort; "Agree" and "Strongly Agree" have been combined to "Comfortable"; "Disagree" and "Strongly Disagree" have been combined to "Uncomfortable"; whereas "Neither" was used as it was.

In terms of climatic comfort, Figure 6.11a illustrates that 35% of those surveyed indicate that their indoor spaces were comfortable within the different climatic conditions: heat, cold, rain and sandstorm. Of these, 24% had already adapted their houses by either covering the yard or adding air-conditioning units in order to increase comfort. Likewise, of the 51% of respondents who feel uncomfortable, most of them, 47%, were still uncomfortable after the changes had been made. Both of these percentages, 24% and 47% of the total, represent significant figures. They show that the majority of the respondents are dissatisfied with their house's comfort in different climatic conditions. Therefore, this aspect requires further investigation.

In terms of climatic comfort within outdoor spaces, it can be seen in Figure 6.11b that 60% of respondents considered their outdoor spaces to be comfortable, bearing in mind that 26.5% of that total had already adapted their houses by either covering the yard or annually renovating the mud walls of the houses in order to be more comfortable, which represents a significant ratio, and requires further investigation.

Fig. 6.11a: Climatic comfort, indoor spaces, comfortable and uncomfortable

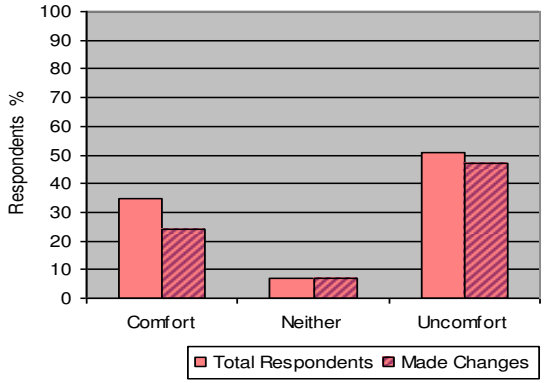
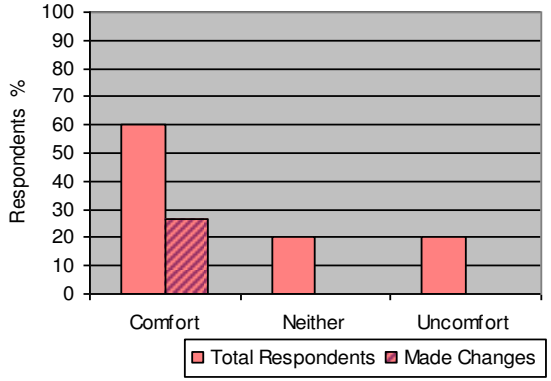


Fig. 6.11b: Climatic comfort, outdoor spaces, comfortable and uncomfortable



In terms of safety, as shown in Figure 6.12, the 4% of respondents who were satisfied with safety in their house because they had adapted the house to meet safety concerns by one or more different means – such as roofing the yard or reducing the size of windows – do not represent a significant number.

With regard to security, the histogram in Figure 6.13 illustrates that the 16% of respondents who are satisfied with their security because they have adapted the houses by raising the roof parapet or installing metal bars over windows do not represent a significant number. Moreover, the 20% of respondents who state their houses are not secure also do not represent a significant number.

It can be seen from Figure 6.14 that the 16% of respondents who are satisfied with their privacy indoors have already adapted their houses by one or more means, such as raising the roof parapet or reducing the size of windows to ensure privacy, do not represent a significant proportion.

In terms of family privacy outdoors, it can be seen in Figure 6.15 that the 11% of the surveyed sample are satisfied with privacy because they have adapted the houses by one or more of the available means to ensure privacy. This does not represent a significant figure either.

Fig. 6.12: Changes for safety

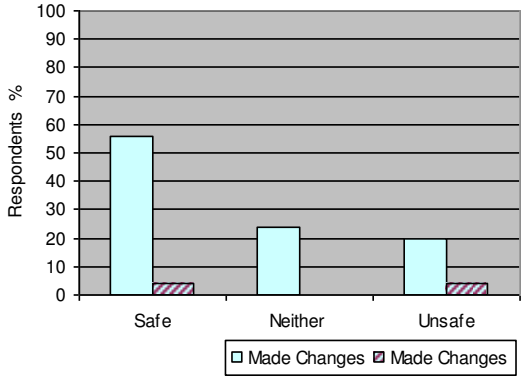


Fig. 6.13: Changes for security

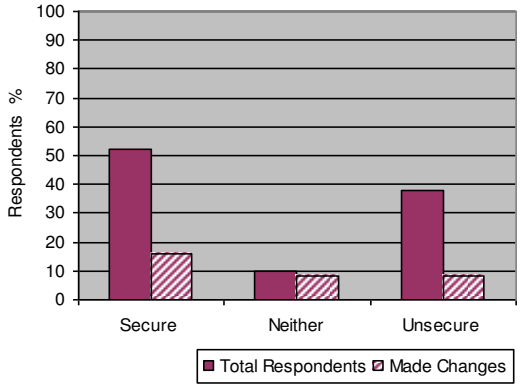


Fig. 6.14: Changes for indoor privacy

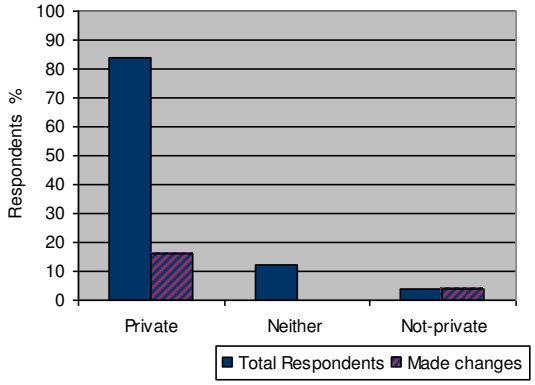
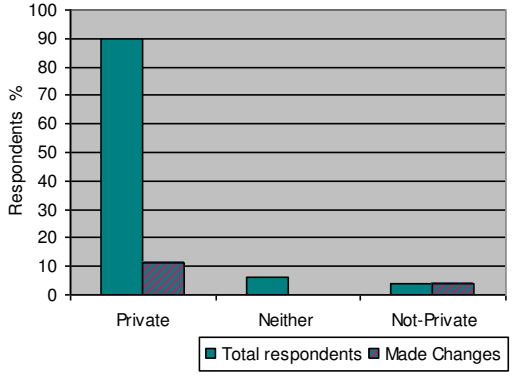


Fig. 6.15: Changes for outdoor privacy



Overall, it can be assumed that the courtyard house seems capable of maintaining family privacy in the indoor and outdoor spaces.

Neither the 16% of respondents who consider house status to be an important issue (Figure 6.16), nor the 32% of respondents who consider the external appearance to be important (Figure 6.17), represent a significant proportion.

Fig.6.16: Responses about importance of house status

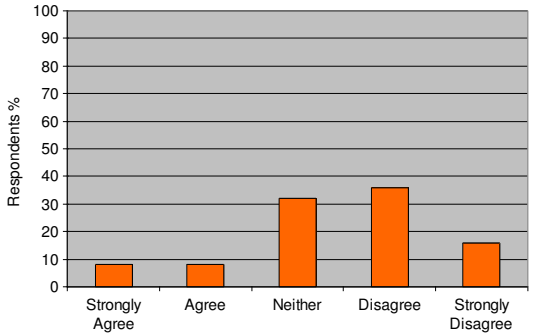
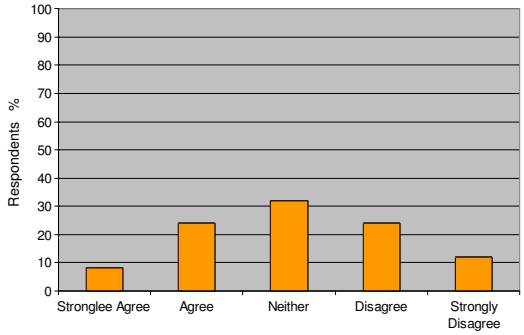


Fig.6.17: Responses about importance of external appearance



6.2.3 Survey results: villa home

The questionnaire was composed of the same eight statements and two additional questions as the survey of the courtyard houses.

Statement 1: *Your house is comfortable in different climatic conditions*. The histogram in Figure 6.18a illustrates that the 75% of respondents either agree or strongly agree with the statement.

During cold conditions, it can be seen from Figure 6.18b that 70% of respondents either agree or strongly agree with the statement. During rainy conditions, the histogram in Figure 6.18c illustrates that 75% of respondents either agree or strongly agree with the statement. During sandstorm conditions, it can be seen from Figure 6.18d that there is not such a positive result as only 54% of respondents either agree or strongly agree with the statement.

Fig. 6.18a: House comfort in hot conditions

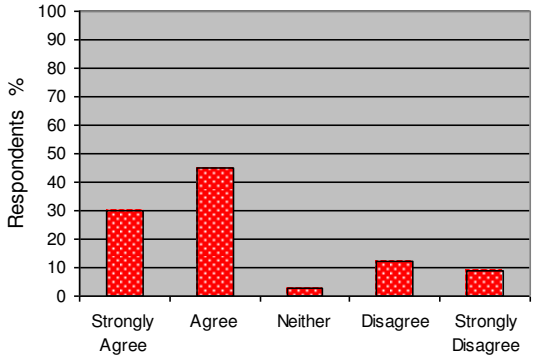


Fig. 6.18c: House comfort in rainy conditions

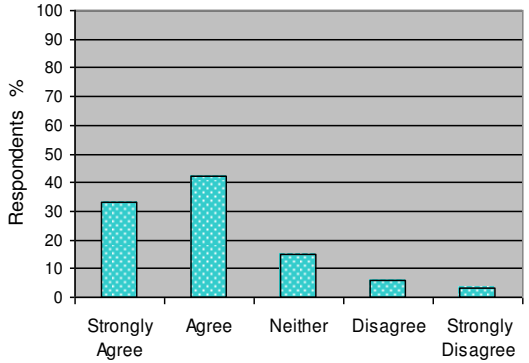


Fig. 6.18b: House comfort in cold conditions

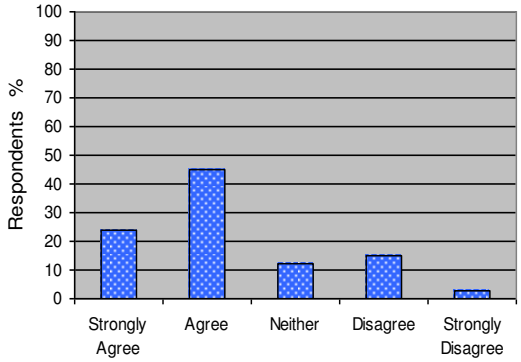
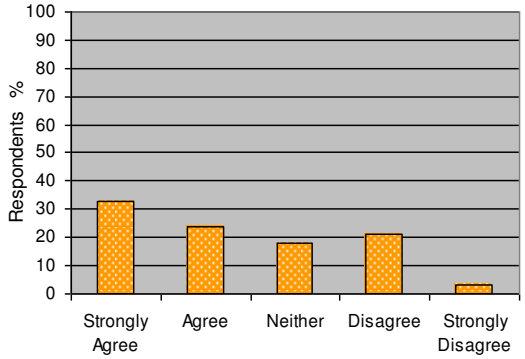


Fig. 6.18d: House comfort in sandstorm conditions



Statement 2: *The outdoor spaces at your house are frequently used at any time*. It is apparent from Figure 6.19 that the majority of respondents, 60%, either agree or strongly agree with the statement.

Statement 3: *You always feel safe in your house.* Figure 6.20 illustrates that vast majority, 94% of respondents agree or strongly agree with the statement.

Statement 4: *you are comfortable about security when you are not there*. As can be seen in Figure 6.21, the histogram demonstrates a less conclusive picture in that 44% of respondents either agree or strongly agree with the statement.

Statement 5: *your family privacy is maintained inside your house from neighbours*. As shown in Figure 6.22, the histogram illustrates a strong showing in that almost 85% of respondents agree or strongly agree with the statement.

Fig. 6.19: Responses about the use of outdoor spaces in the house

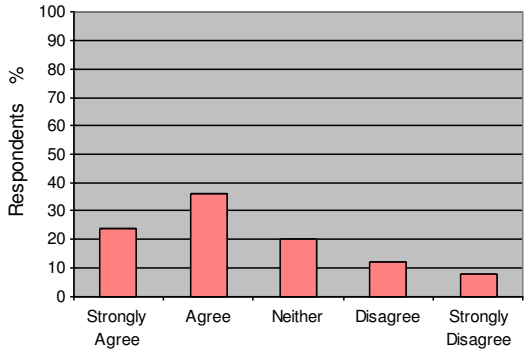


Fig.6.20: Responses about family safety in the house

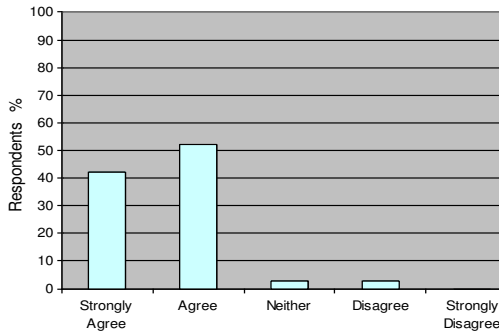


Fig.6.21: Responses about house security when no one is there

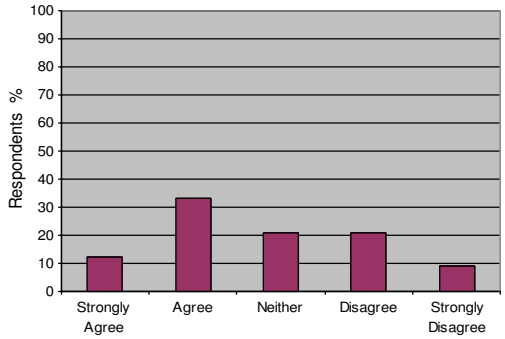
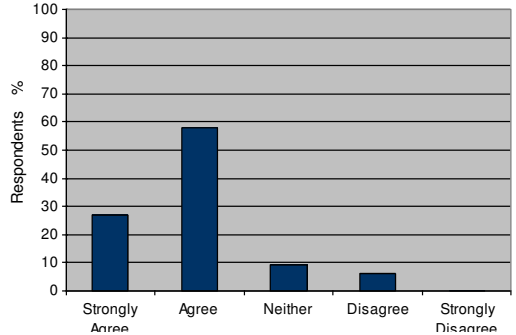


Fig.6.22: Responses about family privacy inside the house



Statement 6: *Your family privacy is maintained in the outdoor spaces of your house.* It can be seen from Figure 6.23 that the results are less conclusive. Nevertheless, 45% of residents surveyed, either agree or strongly agree with the statement.

Statement 7: *You believe that your house status is very important to you*. It is apparent from Figure 6.24 that this is a very positive result, with 90% of respondents agreeing or strongly agreeing with the statement.

Statement 8: *You believe that the external appearance of your house is very important to you*. The histogram in Figure 6.25 shows an even more positive result, with 95% of respondents agreeing or strongly agreeing with the statement and none disagreeing.

Question 9: *Have you made any changes or additions to your house*? This question is divided into two parts. The first part identifies the proportion of respondents who have made alterations and/or additions to their houses in order to improve: comfort against the climate; family safety; security; family privacy from neighbours. The second part seeks to identify the type of alteration or addition made. Seven choices were provided from the literature. The histogram in Figure 6.26 illustrates that most alterations and/or additions are made to improve climate comfort, followed by changes made for ensuring privacy, whereas providing family safety emerges as the least changes made. However, the differential between the categories is not great.

Fig.6.23: Responses about family privacy in the outdoor spaces

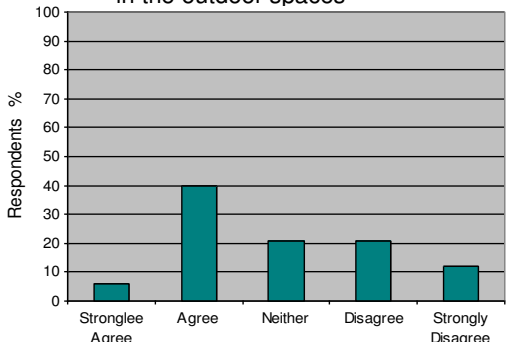


Fig.6.24: Responses about importance of house status

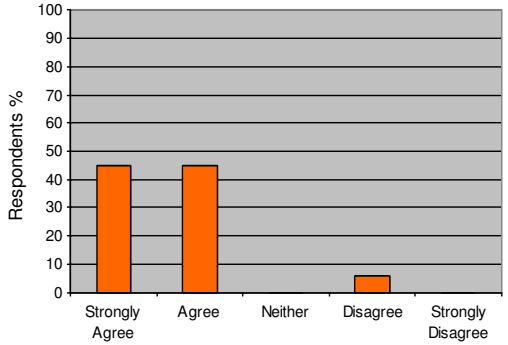


Fig.6.25: Responses about Importance of external appearance

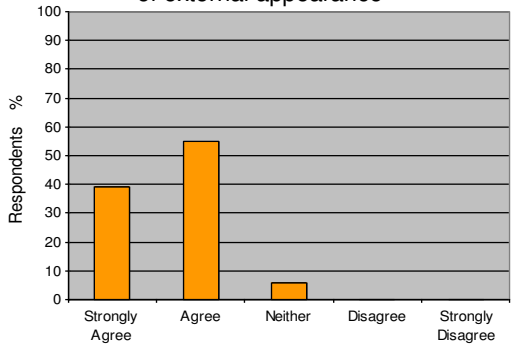
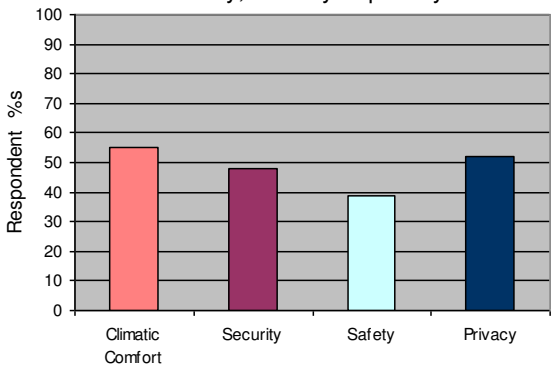


Fig.6.26: Alterations or additions have been made to improve: climatic comfort, safety, security or privacy



Data in Table 6.2 illustrates the various means – indoor and outdoor – used to improve or achieve each issue. In terms of improving climatic comfort, three different means are used: upgrading air-conditioning units; roofing the yard partially or completely; and adding curtains to windows.

Interestingly, most of the respondents use upgrading air-conditioning units to improve climate comfort in their houses, whereas roofing the yard partially or completely appears second. In terms of ensuring security, four means were used: installing metal bars over windows; raising the fence/parapet; installing an alarm system; and reducing the size of windows, either partially or fully blocking them. It is noted from the table that using metal bars over widows is the means most utilised to achieve security.

As for safety, four means are used: raising the fence/parapet (the most popular); metal bars over windows; roofing the yard partially or completely; and the least popular one, reducing the size of windows, either partially or fully blocking them. Finally, for privacy, four means are used ranging from the most to the least popular as follows: raising the fence/parapet; adding any kind of curtains to windows; roofing the yard partially or completely; and reducing the size of windows, either partially or fully blocking them.

Table 6.2: Various means used to improve climatic comfort, security, safety and privacy

		Climatic comfort	Security	Safety	Privacy
Outdoor	Roofing the yard partially or completely	74		6	30
	Raising the fence/parapet		76	94	92
Indoor	Alarm system		8		
	Metal bars over windows		103	53	
	Adding any kind of curtains to windows	66			72
	Partially reducing the size of windows or blocking them		5	3	14
	Upgrading air-conditioning units	80			
	Total	220	192	156	208

Question 10: *From 1 to 6, please rank the following as the most important in your house, where 1 is the most important and 6 is the least*.

As can be seen in Figure 6.27a, safety emerges as the most important need, whereas security comes second, as shown in Figure 6.27b, followed by the need for climatic comfort as can be seen in Figure 6.27c. The need ranked fourth, as can be seen in Figure 6.27d, is privacy. Counter-intuitively, the issue of status appears in Figure 6.27e, ranked fifth, almost perversely followed by external appearance as the least important (Figure 6.27f). Clearly, these results need to be investigated further.

Fig.6.27a: The importance of safety

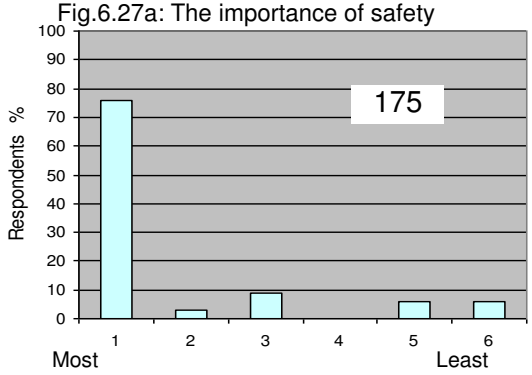


Fig.6.27b: The importance of security

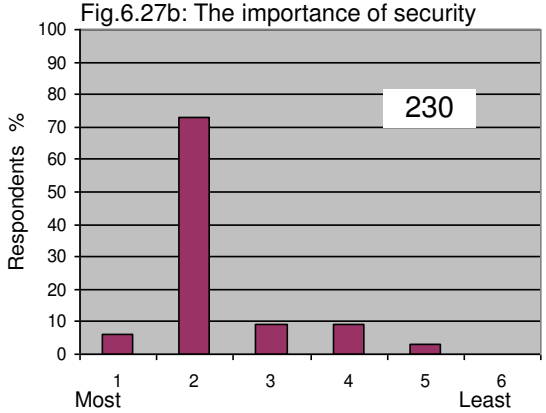


Fig.6.27c: The importance of climatic comfort

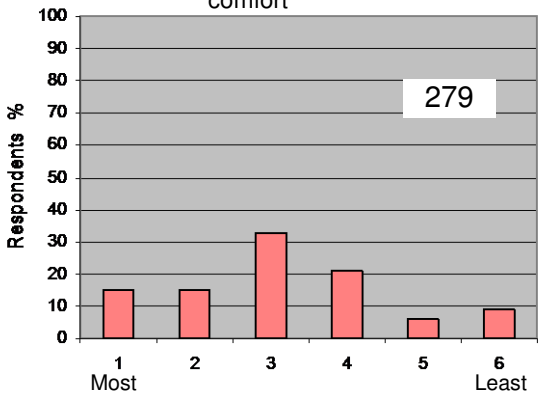


Fig.6.27d: The importance of privacy

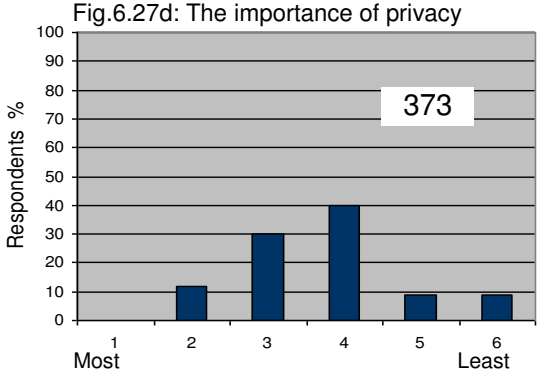


Fig.6.27e: The importance of status

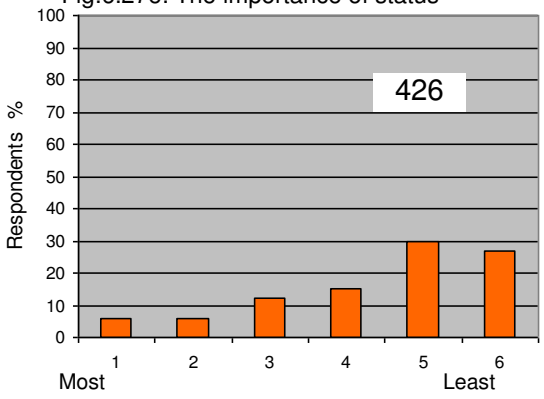
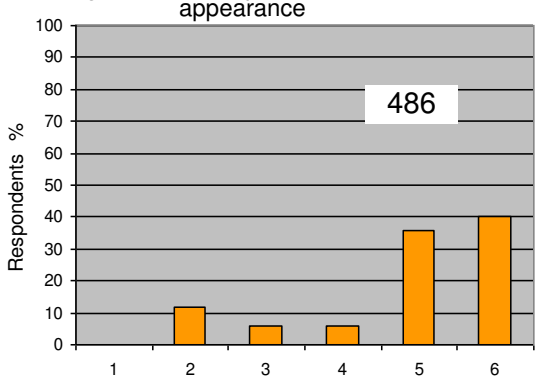


Fig.6.27f: The importance of external appearance



6.2.4 Analysis of Survey Results: Villa home

This part of the study seeks, in particular, to identify the relationship between residents' satisfaction and adaptation of their houses, through comparing the results of statements 1 to 6, which clarify people's satisfaction, with the results of question 9, which illustrates how people have adapted their houses to improve their satisfaction, and question 10, which illustrates the most important needs to them. To present the satisfaction and dissatisfaction of respondents, the Likert scale has been reduced to three points: e.g. for climatic comfort – comfortable, uncomfortable and neither.

It can be seen in Figure 6.28a that 69% of those surveyed indicated that the indoor spaces of their houses are comfortable within the different climatic conditions; heat, cold, rain and sandstorm. A total of 41% of the respondents had already adapted their houses by covering the yard, which represents a significant number, and requires further investigation. Furthermore, of those who experienced lack of comfort, 12.5% of the total are still not satisfied with their houses, even after making some modifications or additions. However, this is a relatively small number.

With regard to the use of outdoor spaces, it can be seen in Figure 6.28b that a relatively high proportion of 44% are still uncomfortable, taking into account that 10% had already adapted their houses by covering the yard. The result shows an unusual pattern of almost equal comfort and discomfort, and therefore needs further investigation.

Fig. 6.28a: Climatic comfort, indoor spaces: comfortable and uncomfortable

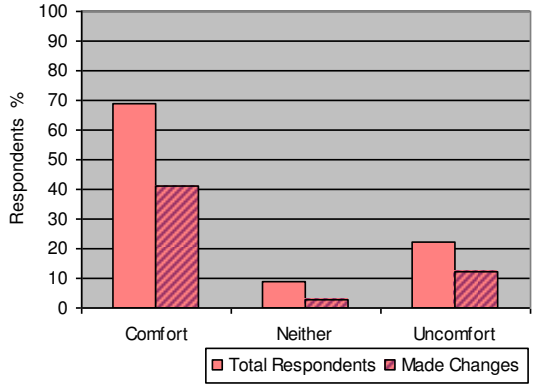
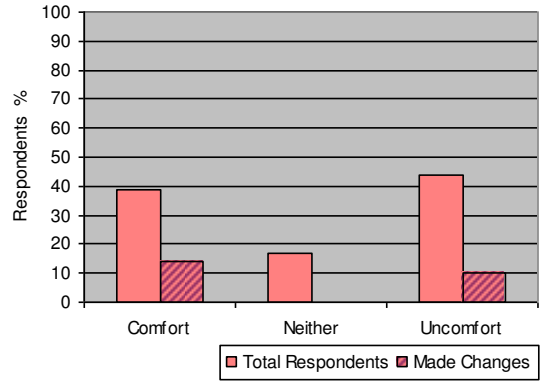


Fig. 6.28b: Climatic comfort, outdoor spaces: comfortable and uncomfortable



In terms of safety, as shown in Figure 6.29, 39% of respondents are satisfied because they had adapted the house by one or more of different means – such as roofing the yard or reducing the size of windows. This has increased the overall figure to more than 90%, while neither and unsafe are negligible numbers.

With regard to security, the histogram in Figure 6.30 illustrates that 32% of respondents are dissatisfied with their house security. Although 45% feel secure, the negative response is sufficiently high to require further investigation about the reasons for this perception. In addition, 36% of respondents, who were either satisfied or dissatisfied about house security, had adapted the house by one or more different means – such as raising the fence or installing metal bars over windows – to ensure security, which does represent a significant number. Nevertheless, 28% of the respondents felt secure without making any changes to their houses. So, further investigation is also required to find out why they feel secure.

It can be seen from Figure 6.31 that 47% of respondents are satisfied with privacy in the indoor spaces because they have adapted the house by one or more different means. Furthermore, those respondents who are satisfied with privacy without making any changes to their house – 38% – also represent a significant figure, and further investigation is required to understand why they are satisfied, as the total is 85%.

In terms of family privacy regarding outdoor spaces, it can be seen in Figure 6.32 that 36% of respondents who were satisfied – "private" – had adapted their houses by roofing the yard or raising the fence to ensure their privacy, which represent a critical proportion.

Fig. 6.29: Changes for safety

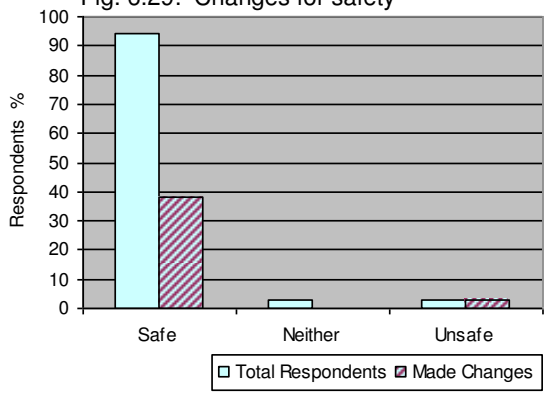


Fig. 6.30: Changes for security

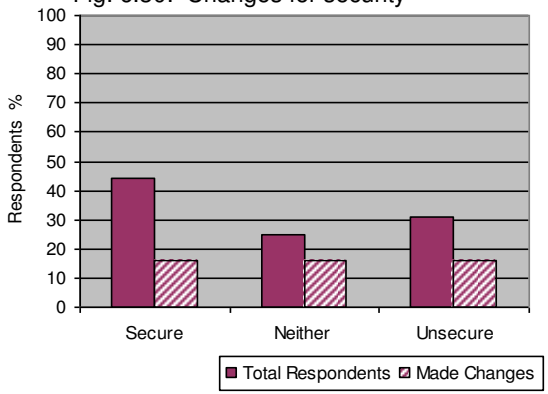
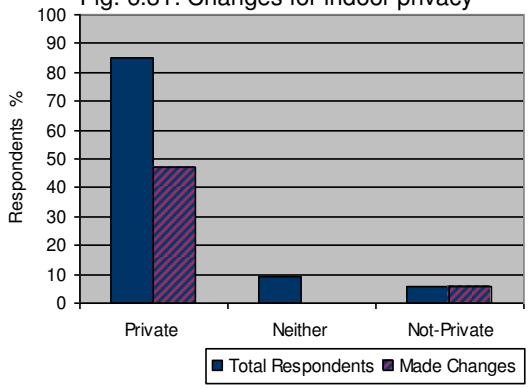


Fig. 6.31: Changes for indoor privacy



Before adaptation, the numbers for outdoor privacy were very low (see Figure 6.32). Although adaptations raised satisfaction to 45%, 31% of respondents still reported a lack of privacy, even after adapting their houses.

Overall, the villa style has mixed results for both indoor and outdoor privacy. For this reason, further investigation is required to identify the main reasons for this perception and to gather more data about suggested solutions to ensure that sufficient privacy is achieved.

In terms of status (see Figure 6.33), 90% of respondents indicate that it is a very important issue for them.

Regarding external appearance, almost everyone in the study sample believes that the external appearance of their houses is very important to them (see Figure 6.34).

Fig. 6.32: Changes for outdoor privacy

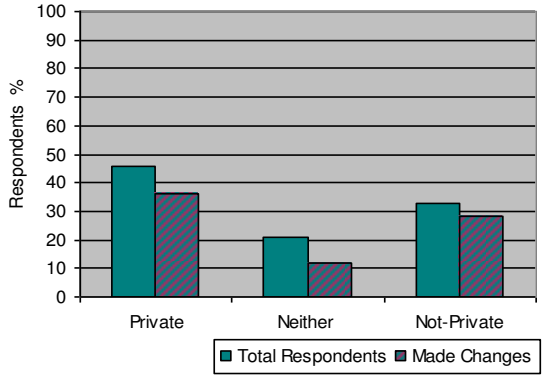


Fig.6.33: Responses about Importance of house status

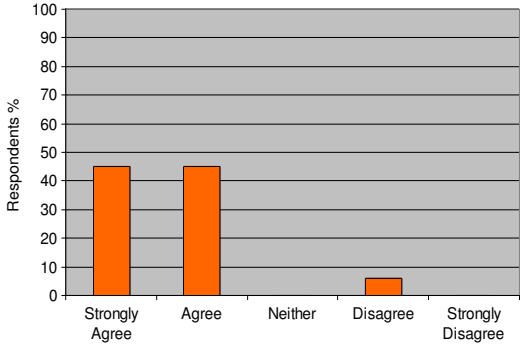
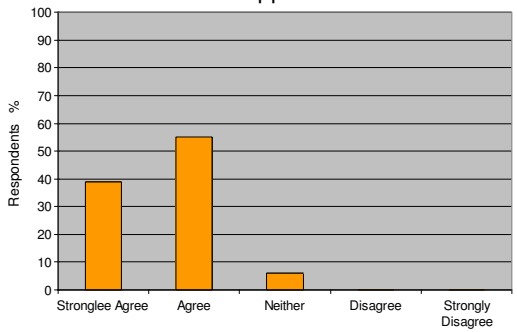


Fig.6.34: Responses about importance of external appearance



6.2.5 Interview Results and Analysis

6.2.5.1 Introduction

The purpose of this introduction is to explain some of the results of the previous survey from December 2012. These are specifically where respondents had indicated that they were satisfied that their needs had been met, but only after changes were made to their houses. For this reason, it seems important to verify two main points: firstly, whether their satisfaction is a result of the changes they had made; and secondly, to understand why and how others are satisfied without having made any changes to their houses. The interviews took place in August 2013.

Accordingly, the interviews were classified into two groups: group A, who were satisfied without changes (20 households for each house type); and group B, who were satisfied with changes (20 households for each house type; 40 in total).

For the courtyard house, the interview schedule comprised four sections, three of them focusing on: climatic comfort, security and external appearance, while the fourth one focused on data about the prime reasons behind selecting this type of dwelling to live in. The questions centred on two main aspects. First, for those who were satisfied after changes – was this satisfaction the result of the changes they had made? Secondly, for those who were satisfied without changes, what were the reasons behind that sense of satisfaction?

It is important to note that all data in this part (interview results) are not necessarily factually true, as they are the perceptions of the residents.

6.2.5.2 Courtyard Home

Following the survey results, three main aspects of residents' needs, i.e. climatic comfort, security and external appearance, were identified for further investigation as follows:

a. Climatic comfort

Group A

Those who felt comfortable without making any changes to climatic comfort observed that a courtyard house in mud brick heats up during the day, and when the temperature goes down at night it reradiates heat into the house. Despite this phenomenon, residents suffer from the local climatic conditions, especially in the summer season, when the heat build-up entices household members to use the top of the flat roof for the purpose of sleep and return inside the house at sunrise because of the high external temperatures during the day.

Interestingly, during the interview, 90% of this group responded that they actually had added air-conditioning units to their houses and/or partially covered the courtyard –

using corrugated steel or plywood sheets – during the last decade as a result of changes in the local climatic conditions with even higher temperatures in the summer and frequent sandstorms throughout the year.

The reason why they changed their answers is worth pointing out. The provision of air-conditioning and partially covering the courtyard are not considered primary changes by them, as they did not add to or remove a part of the house. At the same time, it was difficult for interviewers to observe these changes from outside the house in order to take them into consideration during the survey (see Figures 6.35a and b, 6.36, 6.37a and b).

Group B

The perception of residents who feel comfortable about climatic conditions after having made the changes is that before oil was discovered, the weak economy meant that electrical power was very limited. Therefore, air-conditioning in summer and heating in winter were only rarely available. At that time, the courtyard house was the only available form and it did seem to work as a climatic modifier. But, their perception is that climatic conditions have worsened in recent years with higher temperatures and more prevalent sandstorms. They confirmed that these conditions have led either to moving to a modern dwelling (for those who have the financial ability) or making changes to the existing houses, i.e. adding air-conditioning and/or partially covering the courtyard.

Fig. 6.35a: Outdoor space in a courtyard-house

Fig. 6.35b: Ground floor layout

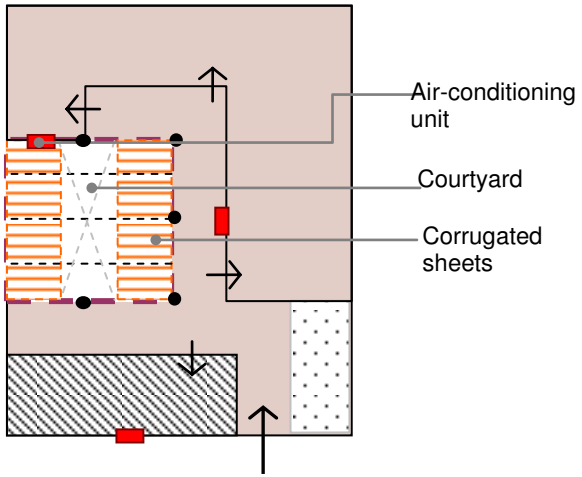


Fig. 6.36: Adding air-conditioning unit

Fig 6.37a & b: Covering the outdoor space

b. Security

Group A

For those people who feel secure in their houses without making any changes, their perception is that security has already been achieved, as the traditional design means that houses have a very limited number of external doors and windows, minimising access points. The streets are always active with residents engage in different activities, and the majority of neighbours are relatives. There is neighbourhood surveillance by local residents, which means that unwanted strangers are kept out.

Group B

On the other hand, for those who feel secure due to changes they have made, the traditional neighbourhood no longer embraces its indigenous residents but is now a mixture of nationalities with different religions, and most are low-income single male workers (see Figure 6.38).

Consequently, these residents tend to secure their houses by using different means to prevent intruders accessing the house. They cover the yard completely and install steel doors instead of the original wooden ones, and reduce the size of windows or block them completely (see Figures 6.39 and 6.40).

Fig 6.38: Low-income unmarried workers

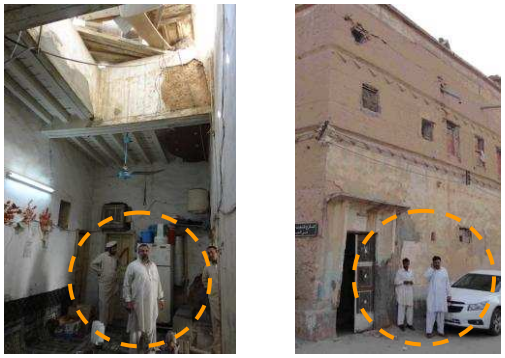
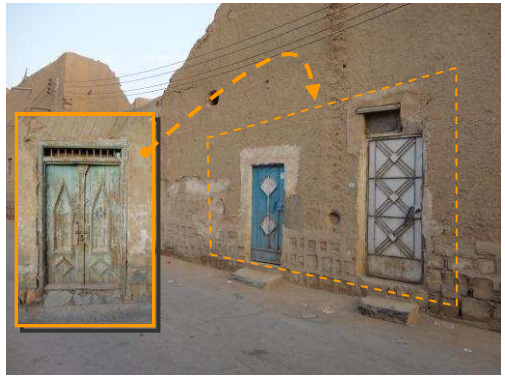


Fig. 6.39: Wooden doors replaced with steel ones



c. External appearance

Uniformity of colours, texture, architectural details, and finishing materials – which confined mostly to mud bricks – constitute the dominant features in the traditional built environment (see Figure 6.41).

Fig. 6.40: Reducing or blocking windows' size

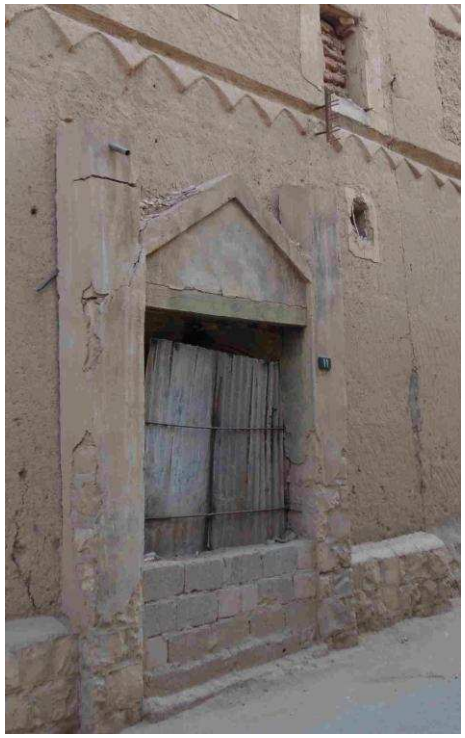
Fig. 6.41: Limited alternatives of building materials

Interestingly, the survey revealed that 32% of respondents considered the external appearance of their houses to be an important issue for their families. When asking them whether this need had been achieved in terms of their current houses, all of them replied in the negative. They pointed out that individuality in external appearance of courtyard houses is limited to some decorating of the main entrance (see Figure 6.42), because of the lack of detail in the building materials. This figure of 32% may not appear to be significantly high, but it should be remembered that the traditional view is that houses should appear as anonymous as possible (see section 4.3).

d. Reasons for selecting a courtyard home

Interviewees were asked about their prime reason for living in a courtyard house. The main response was that a courtyard house constituted the only low-cost dwelling available within their budget. A sense of community as a feature of the traditional neighbourhood, as well as the inherent security and privacy, were cited by only very few of the interviewees. Consequently, almost all of the interviewees admitted that they were ready to leave their courtyard houses if and when they were able to afford villa houses.

Fig. 6.42: Decoration for the main entrance



6.2.5.3 Villa Home

Following the survey results, four main aspects of residents' needs – climatic comfort, safety, security and privacy – were identified for further investigation.

a. Climatic comfort

Group A

Perceptions of those who feel comfortable without making any changes to climatic comfort inside the house are achieved by relying extensively on the use of air-conditioning, in addition to the use of a highly efficient type of thermal insulation. However, other interviewees indicated that they are forced by municipality requirements to have windows on each side of the house, regardless of the negative impacts of the solar radiation on the efficiency of the air-conditioning.

In terms of climatic comfort in outdoor spaces, those who feel comfortable without any changes to the use of the outdoor space were confined to evenings at particular times of the year.

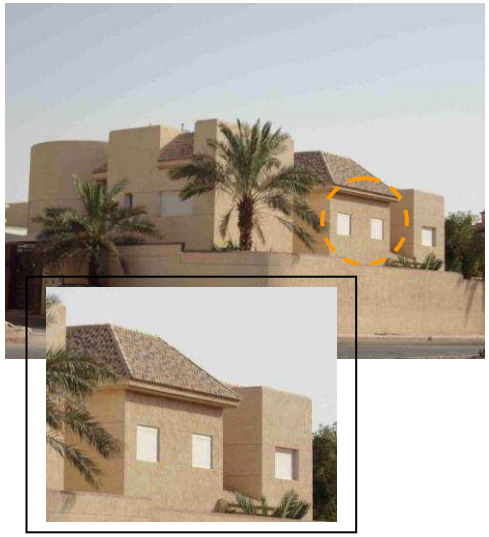
Group B

Those who feel comfortable with changes all stressed that the achievement of climatic comfort in their houses is associated with changes they have made. Respondents indicated that increasingly extreme climatic conditions, such as high temperatures in summer and frequent sandstorms throughout the year (see Figure 6.43), prompted them to upgrade the capacity of the air-conditioning in their houses. Other households tend to add blackout curtains to house windows internally, or aluminium shutters externally (see Figure 6.44).

Climatic comfort is achieved by either partially covering the yard, using either corrugated steel sheets – padded with a thermal insulator – or fabric material in the

Fig. 6.43: Sandstorms over Riyadh City (2013)

Fig. 6.44: Using aluminium shutters for protection against solar radiation



shape of a tent (see Figures 6.45a and b). Nevertheless, covering the yard only helps to provide a shaded area, and does not prevent heat build-up. Planting is rarely employed as a means of reducing the outside heat, due to water scarcity and high maintenance cost.

b. Safety

Group A

A majority of those who feel safe without making any changes have benefited from those made by their neighbours, through increasing the height of party walls up to a height of six metres, either on one or two sides, or completely from all three sides, using screens made of corrugated steel (see Fig 6.46). Other respondents have fulfilled their need for safety due to most of their neighbours being relatives, which means that each one is observing the other's house, or having a chauffeur and/or housemaid keeping the house active at all times.

Group B

For those who feel safe with changes, all of them stressed that achieving safety in their houses is associated with changes they have made. A feeling of safety was achieved after residents raised the height of party and boundary walls using corrugated screens and/or added steel doors and steel mesh over windows.

c. Security

Group A

For those who feel secure without changes, security is mostly achieved due to changes made by their neighbours (similar to the safety issue). They have also raised the height of party walls up to six metres on one or two sides – or completely, on all three sides. Others have also met their need for security through neighbourhood surveillance by residents who are mostly relatives.

Fig. 6.45a: Covering part of the outdoor space using corrugated sheets

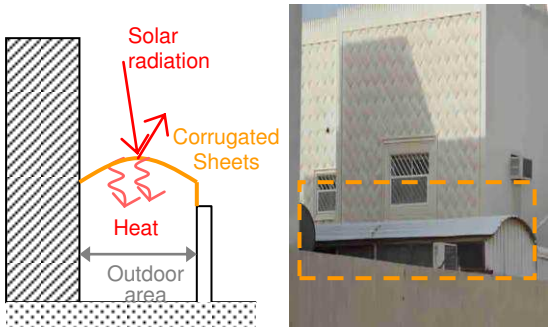


Fig. 6.45b: Covering part of the outdoor space using tents

Fig. 6.46: Increasing the height of the party wall – metal screen

Group B

For those who feel secure after changes, all of them stressed that security is associated with the changes they have made. As with safety, security was achieved by raising the height of party walls using screens made of corrugated steel, which constitutes the most common means (see Figures 6.47a and b), and/or using steel doors and steel mesh over windows (see Figure 6.48), which is another common feature of most houses. Blocking windows and balconies is a severe measure undertaken by a minority of residents.

d. Privacy

Group A

For those who noted adequate privacy without changes, their privacy (indoors and outdoors) is achieved mainly because of changes made by their neighbours, represented by raising the height of the party walls up to six metres. This is the most common means used to ensure privacy, whereas neighbours who are relatives feel that the distance between windows in adjacent properties is sufficient to ensure privacy.

Group B

For those who achieved privacy after making changes, this was done for indoor spaces by having windows and curtains constantly closed, because windows to adjacent houses often faced each other. Nevertheless, residents tend to raise the party walls by up to six metres, which is a more efficient means to protect family privacy, both indoors and outdoors.

Changes made by neighbours such as raising the fence contribute to providing privacy from one side at least. Partially covering the yard – using different materials made of metal or fabric – constitutes another means of providing privacy for outdoor spaces.

Fig. 6.47a: Corrugated screen between houses

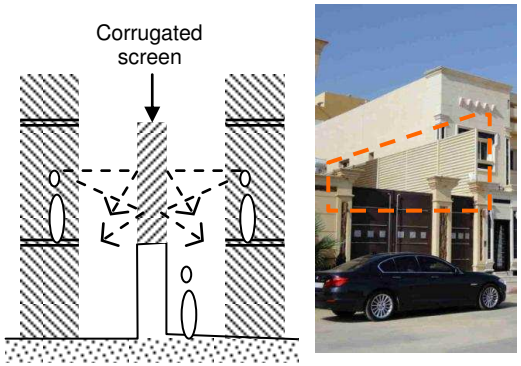


Fig. 6.47b: Corrugated screens as a common feature

Fig. 6.48: Using steel doors and grilled iron windows

e. Reasons for selecting a villa home

Interviewees were asked about the prime reason for living in a villa home. Half of them (20 people) said that the desire for status constituted the main reason to select this type of house to live in. According to interviewees' perceptions, Saudi families seek to express their status within their houses through several means such as having many rooms; large spaces and multiple finishing materials; and large setbacks toward the street. Adopting 21st century technology and furnishings are the prime reason for the other half of the interviewees, who prefer to live in a villa house as it is more suitable for modern furniture, which requires large spaces.

Interestingly, all of the interviewees (40 people) admitted that they would not be willing to live in a courtyard house, as it does not suit a modern lifestyle, is difficult to keep clean, and does not meet the residents' aspirations for status and distinguished appearance.

6.2.5.4 Analysis of Interviews' Results

a. Courtyard home

The evidence shows that 21st century lifestyles have overtaken the traditional courtyard form. According to residents' perceptions, the compactness of houses and narrow alleys were all features that helped mitigate the extremes of the local climate. In the past, climatic comfort was provided by natural ventilation. However, people are now sleeping outdoors, as the indoors is too warm for them.

The general perception among residents is that climatic conditions have worsened in recent years. The demand for car space has led to the opening out of the narrow alleys to produce wide asphalted roads. This action in itself has contributed to raising the temperature in traditional neighbourhoods to higher levels, thereby making it easier for sandstorms to blow through these spaces. Regardless of how dramatic the climate changes have really been, residents have certainly reacted, by installing air-conditioning and adding shading to the courtyard itself. After covering the courtyards, even partially, they have then lost the notion of them being outdoor spaces.

In practice, the concept of community has broken down, as this house form no longer serves the aspirations of 21st century Saudis. Their response has been to move out of such traditional areas, leaving behind their houses mainly to single immigrant workers. This generates a sense of insecurity born out of a lack of familial relationships and permanent residents. The insecurity is evidenced by reinforcing the few openings that exist onto the street.

There has been a long-standing view in Saudi society that anonymity is the most significant requirement with regard to the external appearance of houses (Bahammam, 1998). The exclusive use of mud bricks precludes any individual features, which further adds to the anonymity of appearance.

b. Villa home

The grid-patterned planning of the villa house type has emerged as a result of modernism. It is characterised by the concept of openness to the outside of the houses, emphasising wide streets and large distances between buildings, as well as setbacks from all sides of the house. The authorities imposed these arrangements, considering that they would satisfy the residents' need for status (Eben-Saleh, 1998) However, the residents' view is that the layout merely has an adverse effect on the microclimate around the house, in particular raising temperatures and increasing the speed of sandstorms. The extreme use of glass contributes to penetrating solar radiation, and non-opening windows inhibit natural ventilation. Consequently, residents rely constantly on air-conditioning in order to meet their need for climatic comfort.

In addition, the residents feel that the grid pattern isolates houses from each other, thereby reducing interaction between residents within the neighbourhood and negatively affecting the community spirit. It also militates against an informal type of neighbourhood watch, which used to be an integral part of community life. As a result, these deficiencies do not provide a feeling of safety and security among residents. This, in turn, leads households to employ physical protection.

The desire for a modern appearance with the use of large windows and balconies has had a negative impact, by exposing the house to unwanted intrusion from onlookers, leading to a lack of privacy of both indoor and outdoor spaces. As a result, households have found it necessary to block off balconies and shut off windows on a regular basis. Barriers between houses have become a common feature throughout most contemporary neighbour-hoods.

The evidence shows that most consider-ations are directed towards aesthetics, not to mention a growing dependence on new technologies to solve present-day cultural and environmental problems. This response to the needs of a 21st century lifestyle does not provide sufficient safety, security and privacy for villa residents.

6.2.6 Summary

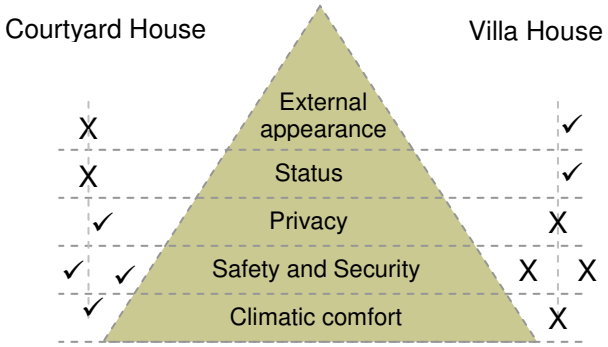
These interviews were conducted with 80 people, half of whom live in courtyard houses and the other half in villa houses. The purpose of the interview was to explain the survey results that have already illustrated that some households' needs – for both house types – have only been achieved with modest changes made by those residents. The changes may also be linked to a general level of dissatisfaction. For this reason, the interviews focused on the verification of the effect of those changes and their relationship to the residents' satisfaction, in addition to understanding the reasons that allowed others to gain satisfaction without making any changes.

The evidence shows that residents' sense of satisfaction is directly related to these changes. For the courtyard houses, initial deficiencies are related to climatic comfort, security and external appearance. As for the villa houses, they are related to climatic comfort, safety, security and privacy. These deficiencies reflect the concerns for these needs as essential socio-cultural and physical factors. Nevertheless, the form of the courtyard house does lend itself to a community spirit. However, that community spirit is not being felt because of the nature of the residents who have moved there; whereas in the villa houses, the form does not help to provide such a community spirit.

The data illustrate that residents have made changes because these types of houses – courtyard and villa – do not work well in such socio-cultural and climatic conditions. However, even taking the changes into account, the results show a mixed response compared with Maslow's Hierarchy of Needs (see Figure 6.49).

If low-level air-conditioning is used to supp-lement the natural climatic modification of

Fig 6.49: Comparison of issues with Maslow's Hierarchy of Needs



the courtyard house, the residents are generally satisfied. This form of house also performs well in terms of safety and security, even though there may be a little over-reaction to strangers. The courtyard house is particularly good at offering privacy to the family. However, the residents consider that the external appearance is unsatisfactory, and the houses do not meet their need for status.

By contrast, the villa houses do offer an acceptable external appearance and status. However, their outward-facing nature has a severe negative impact on privacy, safety and security. Climate comfort cannot even be achieved by constant upgrading of the air-conditioning units. The perpetual rise in external temperature due to the urban layout and energy from air-conditioning systems themselves means that the air-conditioning struggles to reach its design temperature.
Combining modern concepts such as low-level air-conditioning with the traditional typology may well create opportunities for a new form of contemporary home. The physical arrangement of urban settings must respond to the needs of residents and address their demand for climatic comfort, while respecting their social customs and culture. The focus should be on the design of external spaces defined by houses, rather than houses appearing as isolated objects in space. This may result in a reassertion of the traditional compact pattern of development, where there is a hierarchy of spaces in each neighbourhood. Combinations of private, semi-private and public spaces could re-establish community relationships, as well as support the concepts of privacy, safety and security.

Minimising of setbacks might also help to reduce exposed parts of buildings and spaces to solar radiation as well as protect the privacy of the household. In addition, implications for household privacy should be considered as part of the building design.

To conclude, neither of these house types currently satisfies the human needs of Saudi residents. The existing deficiencies might be resolved by a re-evaluation of traditional design.

6.3 Place

Five issues relating to place derived from the literature – attachment, identity, symbolism, location and environment – were investigated during the interviews at two levels: house and neighbourhood. The interviews were conducted with the same 40 heads of household, for both courtyard and villa homes, who had been interviewed for the human needs investigation within the previous section.

6.3.1 Courtyard Home

6.3.1.1 House Attachment

In terms of house attachment, the interview questions sought to identify the sense of attachment between the household and house. The first question was: *In general, are you satisfied with this house?* This question focuses on whether (or not) the residents are generally happy with their house. The majority of respondents indicated that they were happy with their house as it meets most of their needs and is affordable.

As to the second question – *Are there places within your house that you would miss if you move? If yes, what are they, and what are they about?* The respondents identified three spaces (courtyard, flat roof and living room), which constitute the key places that they would miss if they moved to another dwelling (see Figures 6.50, 6.51). These places bring the household together, allowing them to be involved in several familial activities at different times of the day.

Question 3 was: *Does your house function in terms of ease and comfort? If not, what are the reasons for it?* The respondents indicated that their houses are capable of

Fig. 6.50: Courtyard as core of house

Fig. 6.51: Flat roof within a courtyard house

providing for their ease and comfort. Their perception was that there are no serious drawbacks about the courtyard house, except that it is not compatible with a modern lifestyle; i.e. the sizes of rooms are too small to accommodate modern furniture, especially in the living room and bedrooms.

The fourth question – *Does your house function in terms of day-to-day activities?* – investigated whether the house functions properly for different activities: e.g. sleeping, living and cooking. The residents' perception was that the courtyard house meets their needs during daily activities. However, the limitation in size of the living space made it difficult to accommodate the entire household at any one time (see Figure 6.52). As a result, in the case of gathering for a meal, the household tends to divide itself into two groups – males and females or adults and children – so as to be able to fit in the available space.

Question 5 – *Does this house satisfy your need for spaces?* This question focuses on the ability of the house to meet the household's need in terms of rooms. The residents indicated that house spaces tend to be very limited due to the small size of the entire property. Their perception was that due to limitation in the number of spaces, the household tends to use each space – with the exception of master bedroom – for several functions, made possible by the use of movable and light furniture (see Figure 6.53).

Finally, question 6 – *is family cohesion achieved within the spaces of your house? Would you please give some details?* The respondents indicated that within the limitation of available spaces, family cohesion is generally maintained. They added that the courtyard constitutes the most commonly used space for household activities.

Fig. 6.52: Living room: increasing the width via adding internal columns

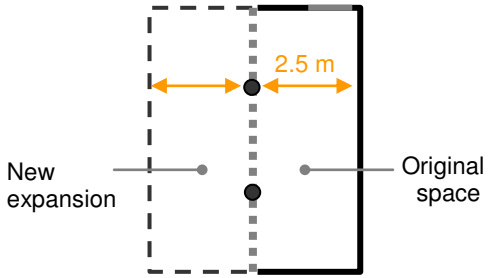


Fig. 6.53: Using moveable furniture

6.3.1.2 Neighbourhood Attachment

In terms of neighbourhood attachment, the interviews sought to identify the impact of neighbourhood attachment on house attachment. The first question is: *In general, are you satisfied with this neighbourhood?* This question focuses on whether or not the household is generally happy to live in this neighbourhood. The predominant feeling amongst the respondents is that the neighbourhood where they live is quite satisfactory.

As to the second question – *Are there places within the neighbourhood where you usually meet your neighbours?* – the respondents indicated that a neighbourhood normally has a variety of spaces, specifically a semi-private space known as a *cul-de-sac*, which is essentially the domain of a family; and *baraha*, which was confined to immediate neighbours, who confer a kind of ownership on the space that made it uncomfortable for anybody else to use, although other residents do cross it as part of a circulation route. There is also public space, where residents are able to meet and be involved in social activities (see Figures 6.54a, b and 6.55).

Question 3 was: *Are there social activities such as regular visits to neighbours?* The respondents indicated that visits between neighbours are very rare due to residents' concerns about the cost of hosting their neighbours. They added that it is not usually necessary to visit each other's houses as they generally meet outside anyway.

In terms of question 4 – *Are there places within this neighbourhood that you would miss if you move? If yes, what are they, and what are they about?* – the majority of respondents asserted that the open spaces – public and semi-private – constitute the most meaningful places which they would miss if they moved to another neighbourhood.

Fig. 6.54a: Hierarchy of open spaces

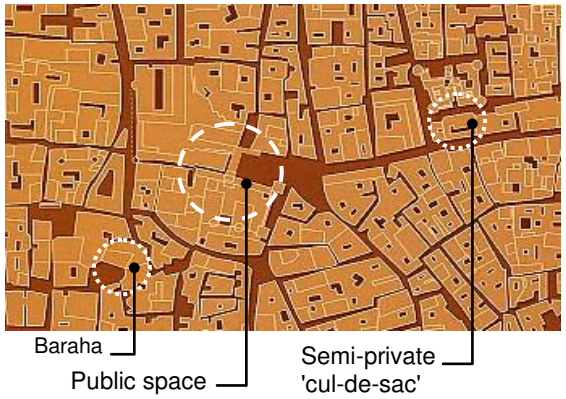


Fig. 6.54b: Semi-private space 'cul-de-sac'

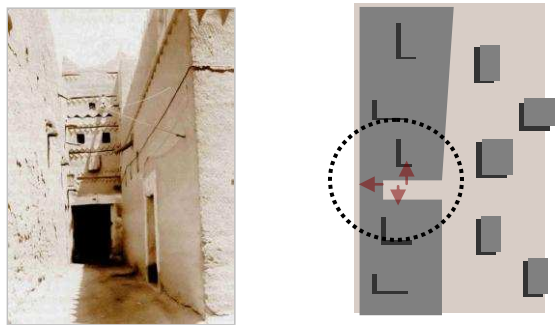


Fig. 6.55: Social activities within a public space

The perception of respondents was that these places are always actively used by residents – children, women and men – with full consideration for the need for safety, and segregation between males and females.

In terms of the fifth question – *Is it normal for you to go for a walk in the neighbourhood? If not, what are the reasons for it?* – all the residents indicated that taking a walk in the neighbourhood is deemed to be a common phenomenon due to several reasons, such as alleys being narrow, shaded and geared towards pedestrians.

Finally, question 6 was – *do you have the feeling that you represent a part of this neighbourhood?* The respondents asserted that they have a strong feeling of belonging to their neighbourhood and feel a metaphorical ownership of the spaces outside their houses. In particular, women and children spend most of the daytime outside the house within the semi-private and semi-public spaces.

6.3.1.3 House Identity

As to the identity of the house, three questions sought the extent to which it exists. The first question is – *Does this house – externally – reflect your personality, and if so, why?* The respondents indicated that their houses – externally – do not reflect their personalities due to the uniformity of building materials and elements. In addition, there is the difficulty of identifying the property boundaries of each house (see Figure 6.56). The residents indicated that they are concerned about this issue. Thus, residents seek to express their personalities through the decoration of the main entrance. In addition, they tend to express their personalities inside their houses, especially by using traditional features and distinct colours in guest rooms (see Figure 6.57).

Fig. 6.56: Uniformity of building materials acts against the desire for personality

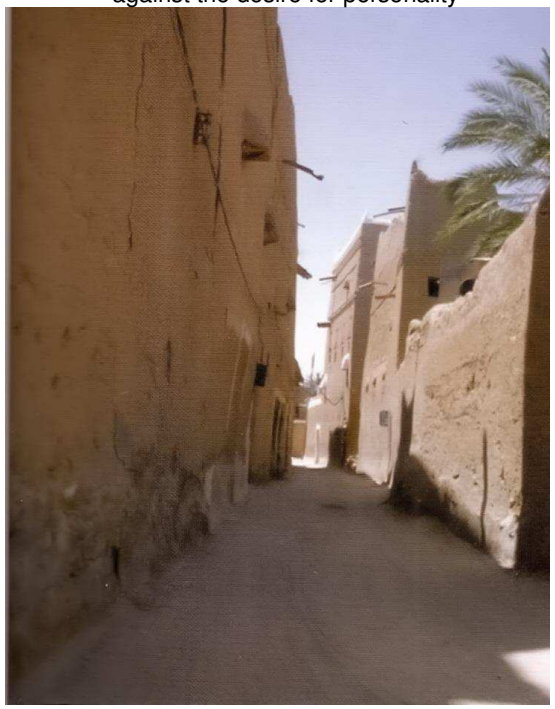


Fig. 6.57: Internal decoration of guest room

As to question 2 – *Do you perceive your house as different from the other ones across the road? If yes, please give some details* – the respondents pointed out that for the same reasons referred to previously, there is no noticeable difference between houses. However, houses that have been built recently are characterised by additional external openings at the first-floor level (see Figure 6.58).

In terms of question 3 – *Does your house – externally – express your cultural values?* – the respondents indicated that cultural values such as respect for the neighbours' privacy are expressed through the form and features of the house; i.e. it is oriented towards the inside with limited openings towards the outside.

6.3.1.4 Neighbourhood Identity

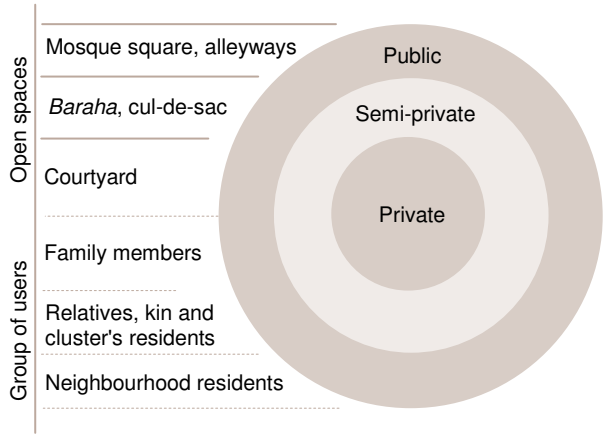
Three questions were used to investigate the identity of the neighbourhood. The first one was: *What made you choose to move to this neighbourhood?* Respondents differed in their reasons behind selecting a particular neighbourhood to live in. Their perception was that there were several factors that influenced their decision, i.e. availability of affordable property; close proximity to the city's commercial centre; and living close to relatives.

In terms of the second question – *Is there anything about your neighbourhood that makes it unique? If yes, give some details* – the interviewees pointed out that the unique feature of the neighbourhood is represented in the understandable hierarchy of the open spaces, which are oriented towards pedestrians. Their perception was that this feature typifies each traditional neighbourhood (see Figure 6.59).

Finally, question 3: *To what extent does this neighbourhood form part of your identity?* The interviewees asserted that through its spatial setting and arrangement, the neighbourhood supports their identity.

Fig. 6.58: Adding more openings for the first floor for status

Fig. 6.59: The hierarchy of open spaces in a traditional neighbourhood



Their perception was that each neighbourhood starts from a central point, which is the mosque, surrounded by groups of houses, connected by alleys, courtyards and open spaces.

6.3.1.5 Symbolism of House

As to the symbolic aspect of the house, three questions sought to show the extent of symbolism at the house level. The first question was: *What does your house mean to you?* Most of the interviewees consider the house as a place of many familial changes. Their perception was that the house is full of feelings and emotions, which change over time, according to the family occasion, such as birthday parties.

The second question was: *What sort of meanings do you give to the different spaces in your house?* The respondents pointed out that due to the essential role played by the courtyard, most of the family memories are forged within that space. Furthermore, the flat roof on the first floor is open to the sky and symbolises family and relatives; the females of the household tend to use the flat roof to enjoy their summer evenings with other female relatives. In addition, in summer, the household tends to use this space after sunset for entertaining and sleeping.

Question 3 was: *Would you mind sharing with me some of the memories and household experiences in this house?* The interviewees pointed out that the essential memories are those related to their children, who were born, grew up, got married and had babies in the same house. For this reason, the house size has been increased over time, based on the sequential changes in the household.

6.3.1.6 Symbolism of Neighbourhood

Regarding the neighbourhood, its symbolism was investigated through one main question: *What does your neighbourhood mean to you?* The interviewees indicated that they attach strong meanings to their neighbourhood as represented by the spatial structure, in which external spaces are influenced by social, cultural and religious attitudes. These spatial elements, in turn, symbolise the major activities that take place in them; e.g. the open space of the mosque symbolises the community annual festival that follows the month of fasting, where households share dishes of traditional food.

6.3.1.7 House Location

To investigate the aspect of house location, one primary question was used: *If your house was moved to another location within this neighbourhood, would that change your feelings about the house?* The respondents agreed that they would not worry about moving within the neighbourhood, because all locations within it have similar meanings that are linked to a particular family or tribe.

6.3.1.8 Neighbourhood Location

In terms of neighbourhood location, the only question raised in this regard was: *If your house was moved to another neighbourhood, would that change your feelings about it?* The respondents indicated that their feelings are associated with the neighbourhood to which they belong. The perception of the interviewees was that they have developed positive feelings about their neighbourhood which would be difficult to transfer to another neighbourhood.

6.3.1.9 House Environment

Regarding the house environment, the question was: *How do you feel about the relationship between the inside and outside of your house?* The respondents indicated that their houses, through the feature of the courtyard, are integrated with the outside environment. Their perception was that the courtyard helps to connect them with the sky and being able to feel the weather throughout the different seasons of the year. Moreover, the courtyard works as a transitional space between the house interior and the external environment.

6.3.1.10 Neighbourhood Environment

As for the neighbourhood environment, the question was: *How do you feel about the relationship between the interior of this neighbourhood and the outside?* The interviewees pointed out that the urban form of the neighbourhood tends to connect the residents with the surrounding environment through urban elements such as pedestrian routes and public open spaces. Alleys and streets are narrow, shaded and winding, which creates a comfortable microclimate; and each group of houses was formed around open spaces.

6.3.2 Villa Home

6.3.2.1 House Attachment

In terms of house attachment, the first question was: *In general, are you satisfied with this house or not?* Interestingly, the prevailing feeling amongst the respondents was that villa houses do not satisfy them. The reasons behind that feeling will be ascertained via the following questions.

As to the second question – *Are there places within your house that you would miss if you moved? If yes, what are they, and what are they about?* – the respondents pointed out that there are no particular places in their houses that they would miss if they moved. Their perception was such because, in their view, villa houses do not reflect a spiritual way of life. They tend to add elements in the yards of their houses, e.g. a Bedouin's black tent or a fire hearth, as reminders of a traditional way of living.

Question 3 was: *Does your house function in terms of ease and comfort? If not, what are the reasons for it?* The respondents' perception was that their houses are incapable of meeting their needs for comfort and ease because of the lack of safety, security and privacy. This in turn, creates a feeling of instability and the desire to make alterations to their houses or move to another place. As to the fourth question – *Does your house function in terms of day-to-day activities?* This question investigated whether the house functions in terms of different activities such as sleeping, living and cooking. The residents' perception was that a villa house meets their needs for such daily activities, except for dining, which has no identified space. Hence, residents tend to convert the family living room into a temporary dining space for the time they need to have a meal. Others do have dining spaces, but prefer to sit on the floor in the traditional manner, rather than at the dining table.

Question 5 was: *Does this house satisfy your need for spaces?* This question focuses on the ability of the house to meet the household's need in terms of spaces. The residents' perception was that with the exception of the bedrooms, the villa house does meet their need for spaces. They pointed out that because there are too few bedrooms; children have to share, when actually they want their own personal space.

Finally, question 6 was: *Is family cohesion achieved within the spaces of this house? Would you please give some details?* The respondents indicated that because of modern technology and lifestyles, being independent is the dominant trait among family members. Children have their own devices – computers and smartphones – so they spend much of the day and night in their rooms. This, in turn, has a negative impact on family cohesion.

6.3.2.2 Neighbourhood Attachment

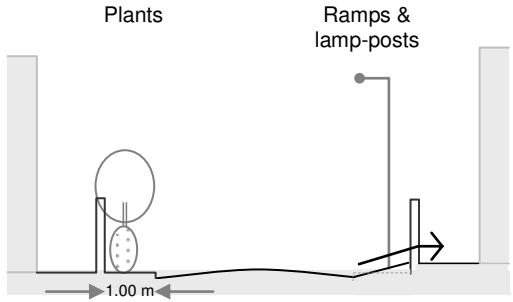
In terms of neighbourhood attachment, the first question was: *In general, are you satisfied with this neighbourhood?* This question focused on whether or not the household is generally happy to live in that particular neighbourhood. The predominant feeling among respondents was that the neighbourhood is not completely satisfactory due to the lack of a pedestrian network and safe, shaded pavements. The car-based layout with wide streets isolates houses from each other. As to the second question – *Are there places within the neighbourhood where you usually meet your neighbours?* The respondents indicated that the district mosque constitutes the only place where neighbours usually see each other, when they gather for worship. Their perception was that the neighbourhood lacks social places such as a community centre or neighbourhood library where residents

could meet and be involved together in social activities.

Question 3 was: *Are there social activities such as regular visits to neighbours?* The respondents indicated that there are regular visits between some neighbours, although more frequently among males than females. One restriction is that the pavements are blocked by obstacles, causing people to walk in the road, with risk from vehicles (see Figure 6.60). In terms of question 4 – *Are there places within this neighbourhood that you would miss if you move? If yes, what are they, and what are they about?* The majority of respondents pointed out that the district mosque is the only place that they would miss if they were to move. Residents gather at the mosque five times a day, as well as during the fasting month of Ramadan when residents spend more time at the mosque for communal worship.

The fifth question stated: *Is it normal to take a walk in the neighbourhood? If not, what are the reasons for it?* All the residents indicated that they would like to take a walk. However – as noted before – their perception is that neighbourhood planning does not provide pedestrian facilities, such as clearly marked and safe pavements. Moreover, as it is only a short distance, people walk to the mosque, but it might pose danger to them from the traffic. Finally, question 6 was: *Do you have the feeling that you represent a part of this neighbourhood?* The respondents asserted that they have no such feeling due to the modern grid-pattern plans, which lead to individuals being isolated from their community. Their perception was that the heavy dependence of residents on cars has weakened contact between them, which, in turn, impacts negatively on their sense of community.

Fig. 6.60: Lack of clear pedestrian pavements due to different obstacles



Cross-section through a neighbourhood street

6.3.2.3 House Identity

Regarding the identity of the house, three questions sought to show the extent of identity at house level. The first question was: *Does this house – externally – reflect your personality, and why?* Respondents indicated that the external appearance of their houses does reflect their personalities. The respondents noted that house owners give the designer indications of the kind of status they require, and the designer interprets it so that the house style and materials express the owner's wishes (see Figure 6.61).

As to question 2 – *Do you perceive your house as different from the other ones across the road? If yes, please give some details* – the respondents asserted that the houses are entirely different externally. This differentiation is due to the desire for personal status, which had led the house owner to use distinguishing features and materials (see Figure 6.62).

In terms of question 3 – *Does your house – externally – express your cultural values? –* the respondents pointed out that their houses do not express their cultural values. Privacy, in particular, is an important part of their culture. Their perception was that due to the number and size of openings toward the outside, the privacy of the household is totally unprotected. This, in turn, affects relationships among neighbours negatively.

6.3.2.4 Neighbourhood Identity

Three questions were used to investigate the identity of the neighbourhood. The first one was: *What made you choose to move to this neighbourhood?* The respondents differed in terms of their reasons for selecting a particular neighbourhood in which to live. The perception of respondents was that there are several factors affecting their decision: availability of public utilities (water, telephone and electricity) as well as public facilities (schools, libraries and universities);

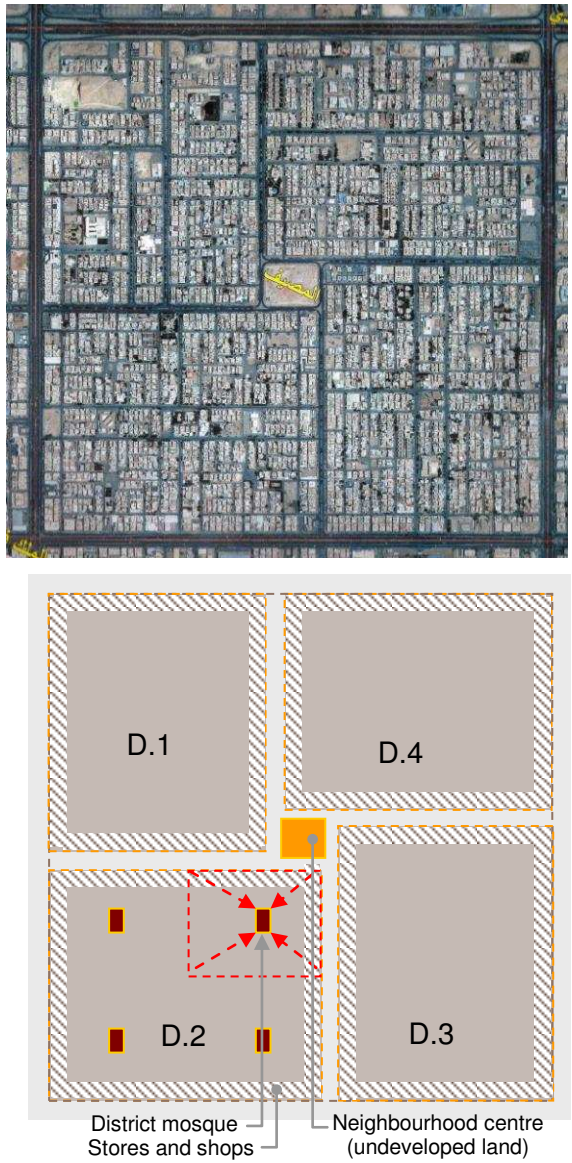
Fig. 6.61: House reflects owner's personality

Fig. 6.62: Using distinguishing features and materials

affordable property; and relatives who live close by. They indicated that most public facilities are located in the northern and eastern parts of the city, which explains the reason behind the desire of most residents to move to those areas. In terms of the second question – *Is there anything about your neighbourhood that makes it unique? If yes, give some details* – the interviewees pointed out that all neighbourhoods are similar in terms of their layout and components. Each neighbourhood comprises a set of clusters of houses, the neighbourhood mosque, a number of district mosques, and some stores, corner shops and schools. Their perception was that they would be unlikely to find a feature that made one neighbourhood more distinctive than the others (Figure 6.63).

Finally, question 3 was: *To what extent does this neighbourhood form part of your identity?* The interviewees indicated that the district mosque (through its form and minaret) constitutes a strong feature that expresses their identity as Muslims. However, the neighbourhood mosque does not represent a place, as the lack of surrounding development makes it appear isolated in an empty space. Also, the feeling was that modern planning, in general, tends to segregate people into different income classes, resulting in a weakened sense of community that jeopardises residents' Islamic identity. The missing traditional home–community linkage is apparent in the lack of useable external spaces, which particularly militates against women and children.

Fig. 6.63: Typical contemporary neighbourhood – layout and components



6.3.2.5 Symbolism of House

Regarding the symbolism, three questions sought to show the extent of symbolism at the house level. The first question was: *What does your house mean to you?* Most interviewees considered the house as a place where their children grow up and all the changes that come with it. Their perception is that the house is a place full

of feelings and emotions, which change over time according to the occasion, e.g. birthday parties or a new baby. The second question was: *What sort of meanings do you give to the different spaces in your house?* The respondents pointed out that most of the memories are associated with the family living space where the household spend most of the day carrying out several familial and entertainment activities. Their perception was that spaces like bedrooms have special memories linked to their users which are different from one to another.

Question 3 was: *Would you mind sharing with me some of the memories and your experiences in this house?* The interviewees articulated that familial memories are mostly confined to the annual celebration of *Eid Al-Feter* which gathers all the family together. Otherwise, children spend most of their time individually inside their bedrooms with their modern gadgets such as computers and mobile phones, some of which are educational and some for entertainment. It is rare that the entire family to be involved in one activity at the same time, except on Friday, the religious day, when all the children share lunch with their parents.

6.3.2.6 Symbolism of Neighbourhood

Regarding the neighbourhood, its symbolism was investigated through one main question, which was: *What does your neighbourhood mean to you?* The interviewees indicated that a decade ago, neighbours had several occasions when they would gather either at the mosque or at their homes, and become involved in a variety of events. The respondents' perception was that social events do not exist anymore; lifestyles have changed, and the desire to achieve family autonomy has become the dominant feature. For this reason, it is not common for residents to have precious memories about their neighbourhood.

6.3.2.7 House Location

To investigate the aspect of house location, one key question was used: *If your house was moved to another location within this neighbourhood, would that change your feelings about it?* The respondents indicated that house locations have similar features. Their perception was that neighbourhood planning do not differentiate between locations, even in terms of orientation. For this reason, residents prefer a house orientation that shades the openings from the sun. Thus, demand means that the prices of those plots are much higher than others.

6.3.2.8 Neighbourhood Location

In terms of neighbourhood location, the only raised question here was: *If your house was moved to another neighbourhood, would that change your feelings about it?* The respondents agreed that feelings and emotions are associated mainly with those who are relatives.

However, their perception was that the neighbourhood itself has no qualities that could help in developing strong emotional connection with neighbours.

6.3.2.9 House Environment

Regarding the house environment, the only question was: *How do you feel about the relationship between the inside and outside of your house?* The respondents' perception was that their houses are isolated from the outside environment. The house form, openings and building materials do not suit the climate. They indicated that residents tend to shut off their houses from the external environment.

6.3.2.10 Neighbourhood Environment

As to the neighbourhood environment, the question here was: *How do you feel about the relationship between the interior and exterior of this neighbourhood?* The interviewees pointed out that the structure of their neighbourhood was formed by wide and straight roads, which do not create a positive microclimate. They noted that the whole layout was geared towards car use, which only exacerbates conflict in the use of external space.

6.3.3 Analysis of the Results

6.3.3.1 Courtyard Home

The evidence shows that there is a vital connection between people and their courtyard homes. Courtyard and flat-roof spaces play a major role in being able to accommodate residents' daily family activities. Meanwhile, the evidence confirms that the house is able to provide ease and comfort, despite the difficulty of accommodating modern furniture due to traditional construction that limits the size of spaces. The limited number of rooms contributes positively to the strengthening of attachments between the household and the house, because it allows for diverse and multiple use of each space.

The evidence shows that, externally, the house highlights cultural aspects, rather than the personality of the household. Alternatively, the similarity of houses from the outside plays a fundamental role in the achievement of equality among residents, which forms a spirit of community as well as cementing cultural identity. Both the courtyard and flat roof play a substantive role in the creation of family memories. The dwelling usually houses several generations, who tend to complement each other's well-being.

Residents of a neighbourhood develop a strong attachment to their specific location, based on an existing familial or ethnic relationship with their neighbours. Therefore, they do not easily move to newer neighbourhoods that may not be compatible with their traditions, and may have a negative influence on their emotional attachment to place. The courtyard contributes significantly to strengthening the relationship between the

internal spaces of the house and the external environment. It forms a transitional space and works to achieve the requirement of adaptation through its ability to mitigate the impact of any environmental changes in keeping with the needs of the occupants.

The organisation of all spatial elements into a territorial order leads to stronger and deeper bonds between residents and their built environment, empowering those residents to assume more responsibility by contributing to the quality of life in the neighbourhood. The integration of the socio-cultural factor into the spatial layouts helps provide residents with more stability and affinity.

Spatial opportunities, in general, increase the frequency in which residents are outside, meeting others, recognising their neighbours' faces and learning names. At the same time, neighbours can build trusting relationships, which would be especially valuable in emergencies. Such an environment provides residents with a better sense of peace and security.

These neighbourhood spaces provide opportunities for practising, controlling and protecting individual community relationships. The spatial elements of the physical environment in terms of the dwelling and within the urban form symbolise the most important activities that take place in them.

The indigenous spatial fabric strengthens the bonds between the social and environmental dimensions, i.e. the adobe building materials, compact building layouts, organic narrow streets and courtyards. The spatial orientation of dwellings, streets and open spaces is tailored to residents' economic, socio-cultural and environmental needs. The compact layout increases shading, reduces exposure to solar radiation, minimises energy waste, brings down temperatures and creates a more comfortable microclimate.

6.3.3.2 Villa Home

A villa home can help express the individual personality of the owners. The desire for status encourages the house owner to use special features and materials in order to reflect their personalities. Thus, it has become easy to distinguish houses from each other, which, in turn, contributes to social discrimination, leading to a lack of community spirit in the neighbourhood.

With the presence of modern technology, the house is no longer able to achieve a sense of family cohesion. There is no longer an active role for the living room as a gathering point for family members, which is replaced by the bedrooms that have become multi-use spaces for one or two children. As a result, family memories are

slowly being replaced with individuals' memories.

Socially, changing the location of the house to another within the same neighbourhood would have little effect on family emotions. In fact, there is so little attachment to these houses that moving to another neighbourhood is only dependent on the utilities and facilities that are available there.

Environmentally, the villa house is completely isolated from the external environment, and internally, it is totally dependent on modern technologies for its internal environment. Similarly, the evidence shows that the planning of the neighbourhood does not consider moderation of the climate, and encourages total reliance on the use of the car. This adversely affects the microclimate and the social lifestyle of the inhabitants. It also impacts on the increasing demand for climate control within the house.

The modern neighbourhood lacks social domains, isolates people in detached dwellings, and emphasises outside spaces for access by cars. As a result, people are less attached to the physical environment, and thus their involvement and experience with it is considerably weakened, fostering individualism rather than community. Consequently, the house becomes a refuge from their lack of engagement with the external environment.

6.3.4 Summary

The interviews were conducted with 80 people (heads of households), half of whom live in courtyard houses and the other half in villa houses. The purpose of the interviews was to investigate the second aspect in the principles of home, i.e. as a place for attachment, identity, symbolism, location and response to the environment.

The evidence shows that the traditional built environment includes spatial features that are rooted in the cultural and environmental context, such as narrow winding alleys, hierarchal open spaces and inward-oriented dwellings. These features contribute to residents being more involved in the built environment, thereby playing a fundamental role in linking people's activities to their environment. In the context of attachment, the physical setting can offer inhabitants identity and meaning.

The contemporary built environment includes features that have emerged from the recent trend towards individualism. It contributes towards isolating inhabitants from their environments as well as depriving them of social activities. Separation of buildings (because of setbacks and wide streets) and a lack of socio-cultural domains such as squares and community centres have weakened residents' involvement and experience with their built environments, and produced

residents with fewer emotional ties and less attachment to their physical environments.

The physical layout and building features of the contemporary built environment are not integrated with the indigenous environment. Its planning facilitates modern trends such as the reliance on the use of cars. The desire for status – using modern styles and novel building materials – seems to dominate the built form of the house, and has done away with the original identity and affiliation to the surrounding environment. Overall, the spatial elements of the modern physical environment in the house and neighbourhood symbolise separation from the external environment through artificial interior climate control, communication technologies and travel by car. It has negatively influenced residents' sense of belonging, as well as their identity with the house and the entire built environment.

6.4 House

This part of the study investigates the third principle of “Home”, i.e. “House”. Five main elements derived from the literature, namely: type, thresholds, arrangement of spaces, nature of spaces, materials and construction, were investigated. During the interviews conducted with the 80 heads of households, an assessment was made as to whether each house was representative of the predominant type. From those viewed to be typical, an agreement was reached with one courtyard and one villa household to analyse the building and obtain additional data on the household and guests.

6.4.1 Guests

Before proceeding with the results of the house study, it is important to discuss the role of guests in Saudi society, as the notion of guests has quite a significant impact on the design and use of the houses. This phenomenon may be unfamiliar to residents in many other countries. For believers who follow the Qur’an’s morality, respecting one’s guests is a way to observe Allah’s commands. Having guests is an opportunity to earn Allah’s pleasure and display moral excellence. Guidance about the duration of stay seems to be at least a day and a night, and up to a general maximum of three days and nights. There is also a principle that guests should be more than welcome; they should be honoured (JCMA, 2014).

Family members and other relatives tend to visit about once a week, with up to eight adults and children at a time. For friends and neighbours, the number is variable, with up to six male and female adults. These guests visit for a short period of time, usually about two hours. Mostly, they know each other already. Guests from outside the city are up to three male friends and/or up to six relatives – adults and children no older than about 14 years of age. Thus, houses provide substantial accommodation for guests as well as them being honoured with meals (Meehan, 2014).

6.4.2 Courtyard Home

Courtyard houses are two stories high, without any setbacks from neighbouring houses. They are planned with no openings towards neighbouring houses, nor can the courtyard be seen by any neighbours from their roofs.

6.4.2.1 Types

According to Mustapha et al. (1985), there are four different types of courtyard house,

related to the position of the courtyard itself. There is the centrally positioned courtyard with accommodation around it on all sides; and a U-shaped plan, with accommodation on three sides. There are also two types which can only be located on the corner of two streets. The first is an L-shaped courtyard which occupies the corner of the plot; and secondly, the two-courtyard house, with one at the front and another in the rear of the house (see Figures 6.64 a, b, c and d). From observation, it is clear that the centrally positioned courtyard is, by far, the most common type, which is supported by Mustapha et al. (1985, p.143) and Mubarak (2004, p.575). Therefore, an example of this type was investigated.

The house selected for this part of the study, is occupied by a typical family – father, mother, four sons (6, 10, 14 and 16 years of age) and two daughters (2 and 18 years of age).

Fig. 6.64a: Courtyard house; centrally positioned type

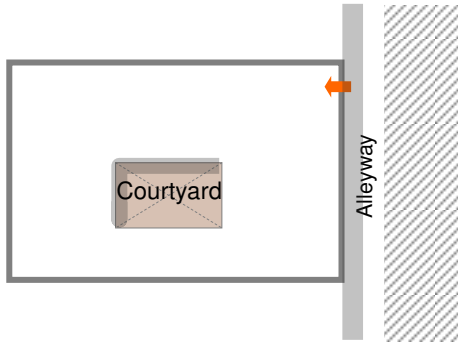


Fig. 6.64b: Courtyard house; U-shaped type

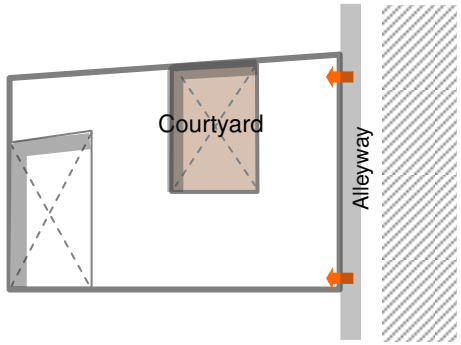


Fig. 6.64c: Courtyard house: L-shaped type

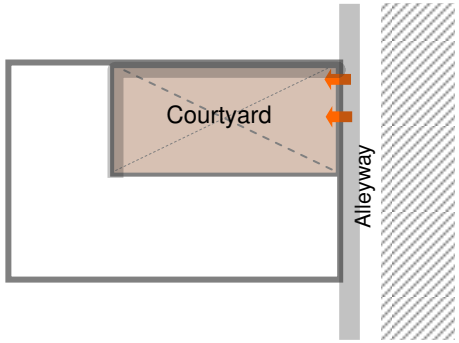
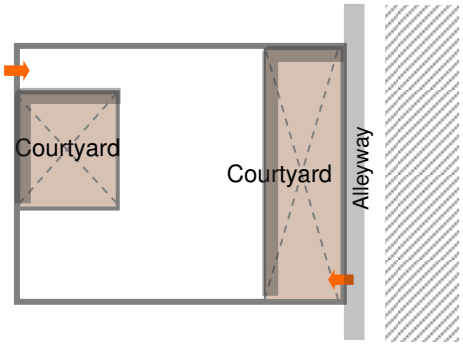


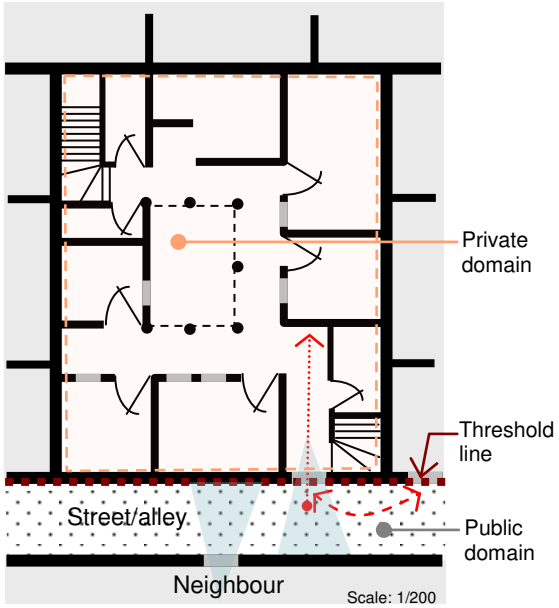
Fig. 6.64d: Courtyard house; two-courtyard type

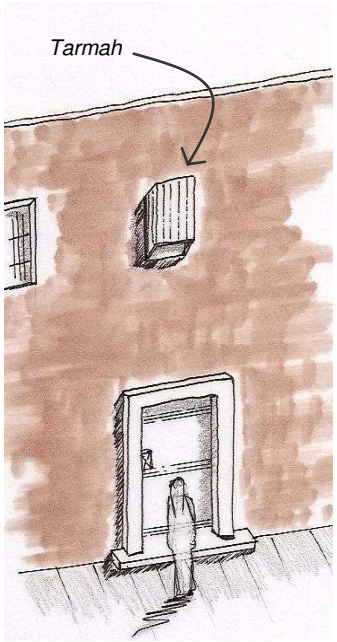


6.4.2.2 Thresholds

The house faces onto a relatively narrow street or alley, and the threshold marks the boundary between the public and private domain. This wall, containing the entrance door, represents a sharp division between what is external and public, and what is internal and private (see Figure 6.65). The door opens onto a lobby, which constitutes a shared space between the male guests and family/female guests. The view into the house is protected by a screen wall opposite the door. Entrances are located in such a way that they do not face each other across the street. However, each is positioned close to the entrance door of the adjacent house to encourage the privacy of the inner part of both houses. Entrance doors consist of a single leaf, which is hung on the same side as the accommodation to augment the visual masking of the interior. On the threshold wall, a limited number of openings are carefully arranged so that they do not face neighbours' windows. For example, over the entrance at first floor level, there is a wooden box known as a *tarmah*. This is used by the women of the house to observe people at the door before they are invited inside. It will be seen in the next section that the *tarmah* is located within the male guest section. Therefore, it can only be used by the women when no male guest is in residence.

Fig 6.65: The threshold of the courtyard house; entrances relationship and *Tarmah*.





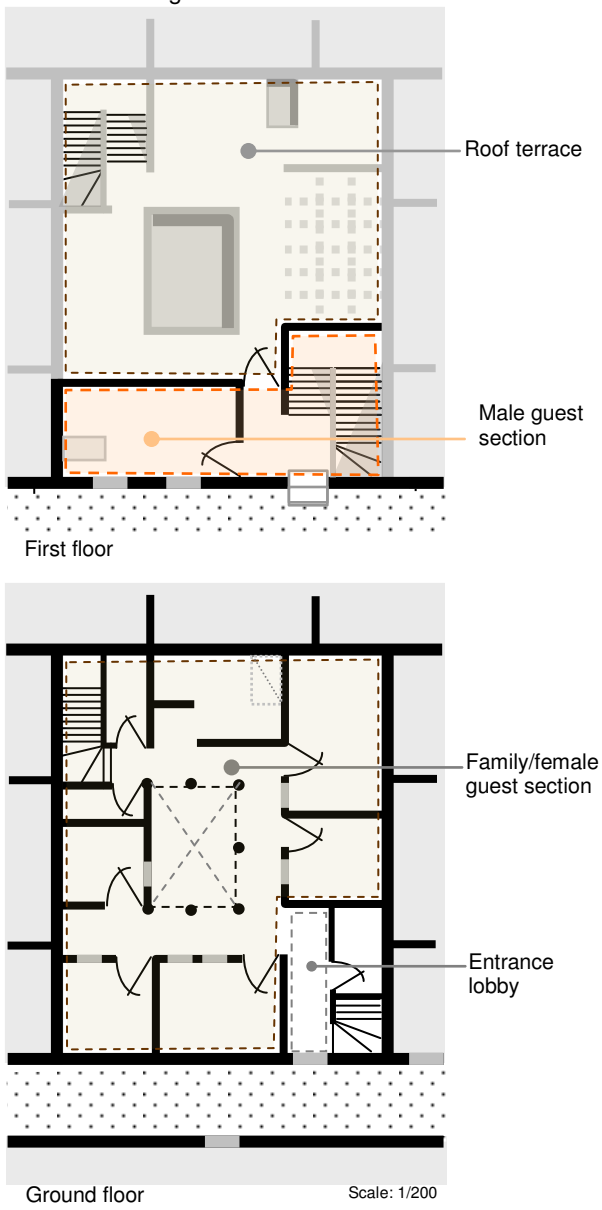
6.4.2.3 Internal Arrangement

The layout of the house is clearly divided into two sections – male guest accommodation on the first floor, and family/female guest accommodation on the ground floor (see Figure 6.66). The entrance lobby is the only shared space between all the users, and enables male guests immediate access to their space on the first floor. When entering the house, male guests are escorted up the staircase, whereas the family and female guests just pass through the entrance lobby to their ground floor accommodation.

The focus for the family and female guests is the courtyard located at the centre of the house, with rooms situated around it for their use. However, they can also gain access to the roof at first floor level, by means of the family staircase situated at the rear corner of the house, in a secluded position. Thus, the first floor has both indoor and outdoor space. At the front of the house is the room for male guests. This is known as the *majlis*. It is a multi-purpose space where they sit, eat and sleep. There are no windows to the street at ground floor level, so that no part of the interior can be seen from outside. This risk is greatly reduced at first floor level but the arrangement of spaces means that apart from the occasional use of the *tarmah*, only the *majlis* overlooks the street.

The remainder of the first floor consists of the roof terrace. This is used as outdoor sitting and sleeping spaces for the family, primarily when no male guests are staying. If the family should wish to use the terrace while male guests are in residence, there is a strict understanding that the connecting door will remain closed.

Fig 6.66: Courtyard house – internal arrangement

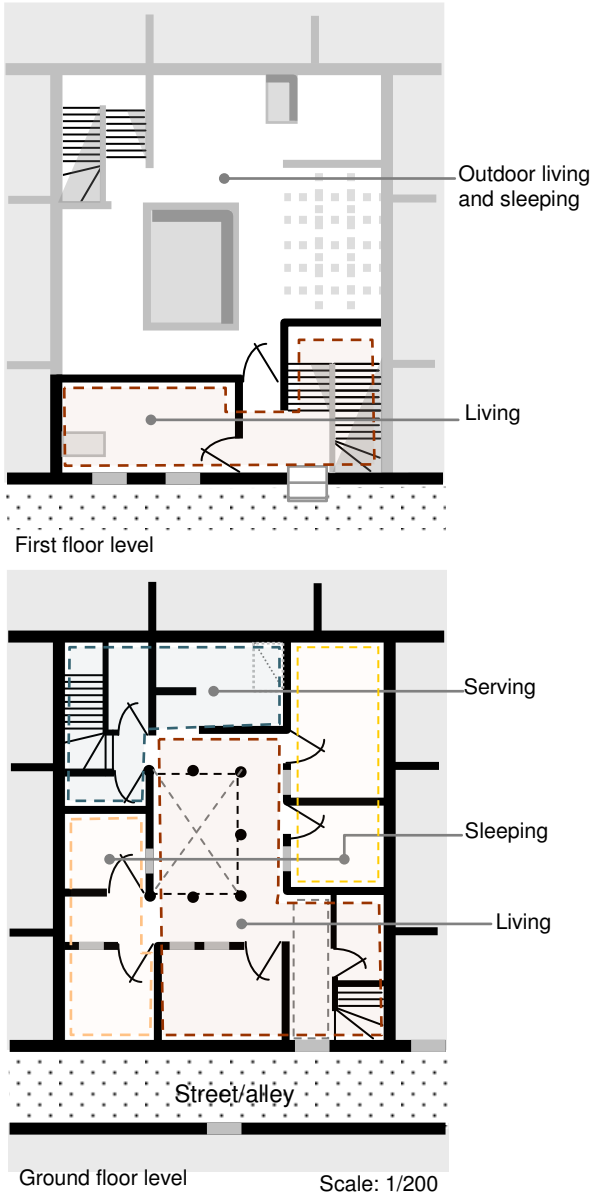


6.4.2.4 Nature of the Spaces

All the ground floor spaces are centred around the courtyard, and have direct access to it through the shared colonnade which surrounds the courtyard on three sides. This arrangement helps in creating a microclimate of shade and cool air for these rooms. In addition, all openings, windows and doors are oriented towards the courtyard, and meet their need for natural light and ventilation from it. The courtyard and surrounding colonnade provide a convenient living space for the household as well as for the female guests. As suggested by Al-Saleh (2008), the family gathers and eats its meals within this space, where most of the daily household activities take place. The courtyard represents the family's private open space, providing them with comfort, security and privacy, as well as protection from the summer sun. The female guests stay and dine in the courtyard or family/female guest living room (see Figure 6.67), depending on the weather. In the summer, they sit in the courtyard, whereas in winter they use the living room as it is cold outside. The family and female guests use the same bathroom, which is situated in the far corner of the house adjacent to the staircase.

The kitchen space is divided into two parts; one for cooking, and the other for washing up. It only has a very limited amount of modern equipment, due mainly to the lack of space. Furthermore, it has no openings to the courtyard, and so the ventilation needs to be taken vertically through a small opening in the ceiling to the roof terrace. As the kitchen is small, the courtyard can be used for cooking and food preparation for larger gatherings. The storeroom is located near the kitchen, and is used to store food, such as rice and dates, in addition to storing the cooking pots.

Fig. 6.67: House classification based on different activities



Apart from the master bedroom, all the bedrooms are similar in size, and rarely exceed 2.5m in width because of the short span of the timber roof structure. In addition, due to the use of furniture that is easy to move and store, the bedrooms are able to be used for gathering and eating, as well as sleeping (see Figure6.68).

The male guest living room or *majlis* is located on the first floor and used for sitting and dining, as well as sleeping (see Figure 6.69). The male guest bathroom is located on the ground floor within the entrance lobby. The *majlis* is decorated with plaster and has a coffee-hearth known as a *wijar*, which is a familiar feature, usually located in one corner of the room with an opening in the ceiling to allow for ventilation. It has shelves to hold the coffee equipment (see Figure 6.70). Male guests are served Arabic coffee, dates and tea by the householder or his eldest son as part of their hospitality. If the guests come from outside Riyadh, they all sleep in the *majlis* where they are joined by the householder. When there are female guests, the women sleep on the ground floor. It can be seen in Figure 6.69 that the *majlis* constitutes the largest room in the house, and as Al-Saleh (2008) points out, it reflects the intent of the householder to honour his guests.

Fig. 6.68: Ground floor spaces and circulation

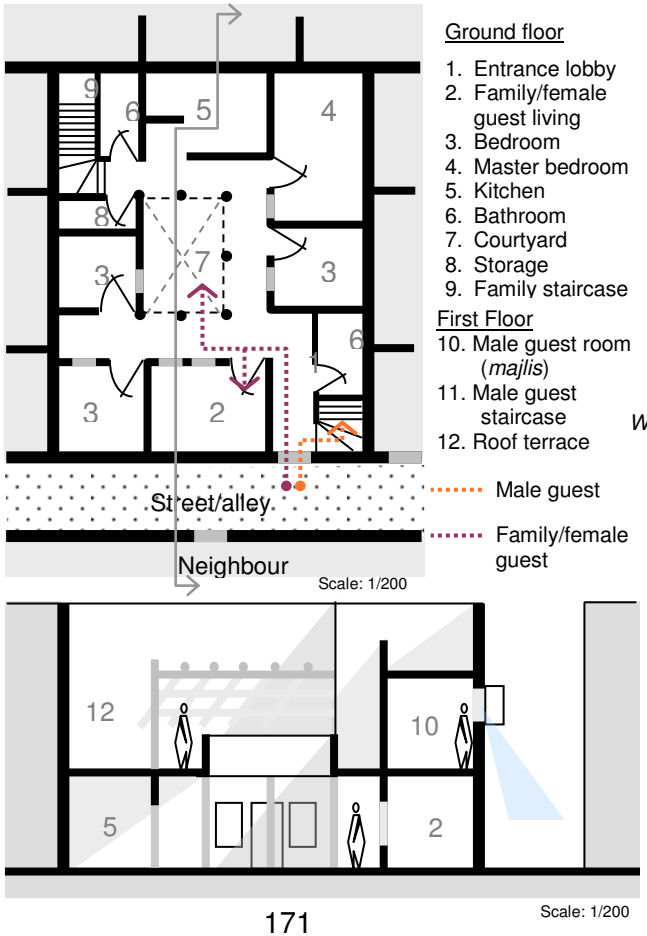


Fig. 6.69: First floor spaces and features

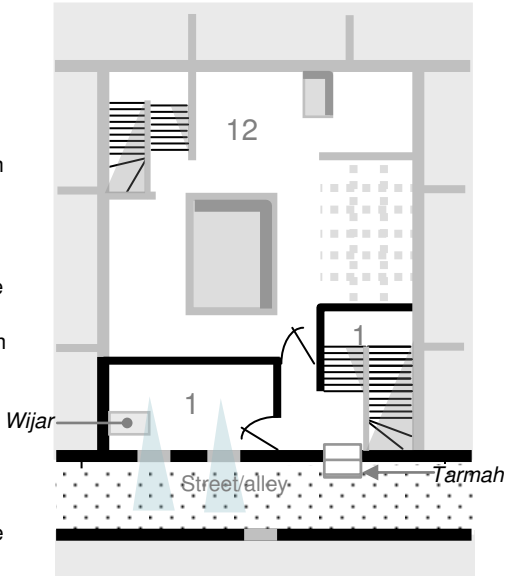


Fig. 6.70: Male guest room – the coffee-hearth

An advantage of the windows overlooking the street is that it is not necessary for windows to face towards the roof terrace, and therefore the privacy of family members using the terrace is not compromised.

The terrace is divided by two-metre-high mud walls to create a number of spaces for family and guests to sit and sleep. These spaces may be developed into additional rooms as required in the future as the sons get married. It may seem an unusual feature, but the party walls at roof level have a small opening in them to allow the women in the houses to share food with neighbours. This is encouraged in Islamic culture.

6.4.2.5 Materials and Construction

Traditional building materials are plentiful, inexpensive, local and easy to use. Al-Saleh (2008) notes that, in particular, mud suitable for building is abundantly available in nearby valleys and plains. Before the mud is used, it is soaked with water and mixed with straw to become bricks, known as *libin* (see Figure 6.71). These bricks have useful characteristics such as structural and thermal mass. They store heat during the day and re-radiate it during the cool night. Conversely, on hot summer days, the time lag in re-radiation enables the interior spaces to remain cool while external temperatures are high. Moreover, as a natural material, it contributes to reduction in environmental pollution.

The foundations are built in stone with mortar made of soft mud. The stone is placed one metre underground and 0.5 m above ground level to provide durability and protection from floods. The walls are built in solid, sun-dried mud brick and coated internally by a layer of white plaster up to half of the wall's height. Roofs are made by laying *tamarix aphylla* or palm trunks parallel to each other at 500 mm intervals. They are covered with two layers of palm leaves and then with a mixture of mud and hay for reinforcement (see Figure 6.72). The floors are covered with mud, which is soaked in water for several months to be dark in colour and smooth in texture.

The main entrance door was originally made of carved wood and adorned with coloured drawings of local plants and flowers (see Figure 6.73). However, for security reasons, it has been replaced with a steel one that is more durable. The internal doors and windows are made of timber that is locally sourced (see Figure 6.74).

It is clear that almost all materials used to build this house are natural and locally available.

Fig. 6.71: Sun-dried mud bricks (*libin*)

Fig. 6.72: Courtyard house wall and roof structure

Palm fronds

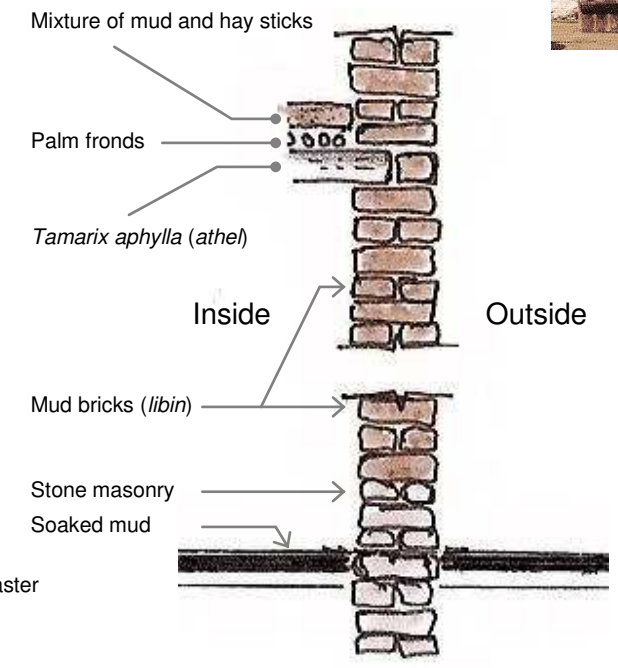


Fig. 6.73: Main entrance door – before and after

Fig. 6.74: External window – made of timber and steel

6.4.3 Villa Home

6.4.3.1 Types

Based on the location of external space, four different villa house types were identified: detached, attached on one side, and two varieties of attached on two sides (see Figures 6.75a, b, c and d). According to Bahammam (2011), Saudi families prefer the detached type, as it is able to provide full autonomy for the household, which, in turn, represents part of the family status. In addition, the *Technical Requirements for Obtaining Permission to Set Up Villas and Residential Buildings* (2007) state that house attachment is only available where all the attached houses are owned by one person or company at the time of construction. Consequently, detached dwellings are, not surprisingly, the most common type. This observation is supported by Eben-Saleh (2001, p.185) and Bahammam (1998, p.559). Thus, an example of the detached type was examined. The house selected for this part of the study, is occupied by a typical family – father, mother, four sons (2, 5, 13 and 18 years of age) and four daughters (4, 7, 10 and 16 years of age). There are also non-family members – a housemaid (35 years of age) and chauffeur (42 years of age). The housemaid lives in and the chauffeur lives in an annex incorporating a bathroom and kitchen, located adjacent to the boundary wall and entered from the street.

Fig. 6.75a: Villa house, detached type

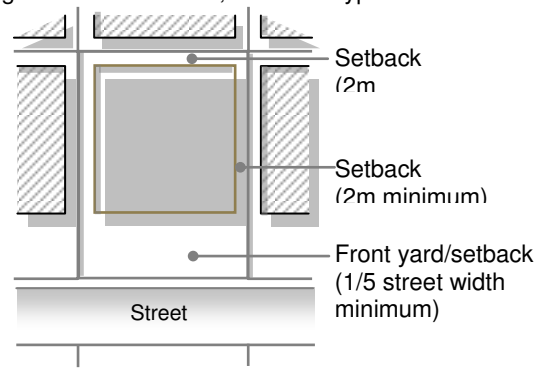


Fig. 6.75b: Villa house, attached on one side

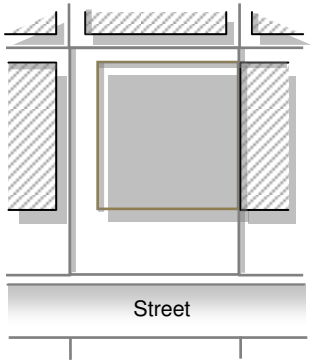


Fig. 6.75c: Villa house, attached on two sides

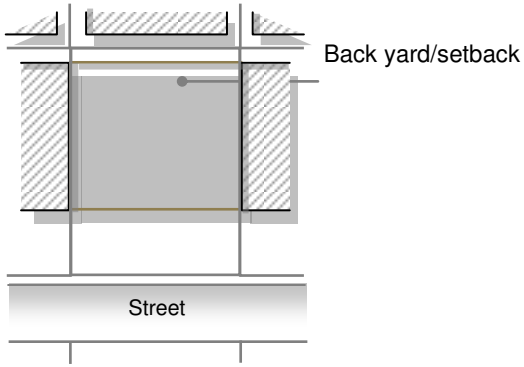
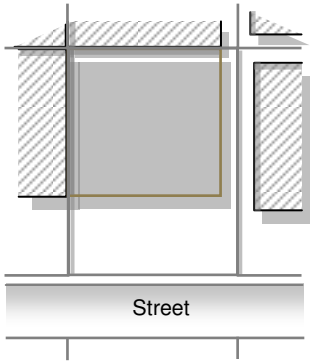


Fig. 6.75d: Villa house, attached on two sides



6.4.3.2 Thresholds

The house threshold marks the boundary between the street and the yard space in front of the house. The threshold wall provides a sharp division between what is external and public and what is internal and semi-private or private (see Figure 6.76). As stated in Rapoport (1969), entrances are used to separate functions or categories of people. The house threshold has three different entrances which help facilitate formal and informal visiting patterns for male guests, female guests and family, and vehicles. These gates align with three entrances to the house. The central entrance door is the one for male guests, the right-hand door is for female guests and the family, while the left-hand, side door, is used by staff, which in practice means the housemaid (see Figure 6.77). This door links to the vehicle entrance. The male guest entrance door consists of two leaves, whereas the female guests/family entrance door consists of just one. This reflects the importance of the male guests. The garage door is an electric shutter that can be operated remotely from the vehicles. The family owns three vehicles. One is driven by the chauffeur for the benefit of the women and children. The other two are driven by the householder and the eldest son.

Fig 6.76: Villa house threshold

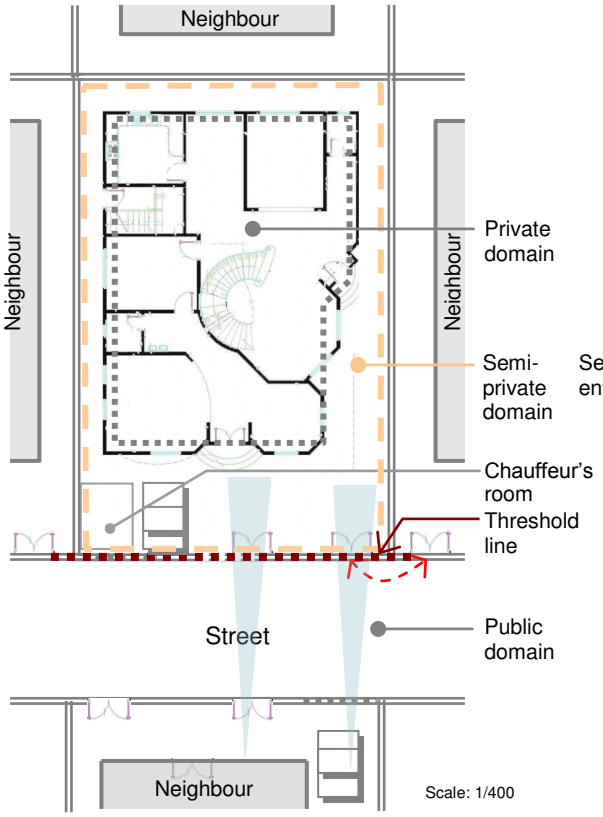
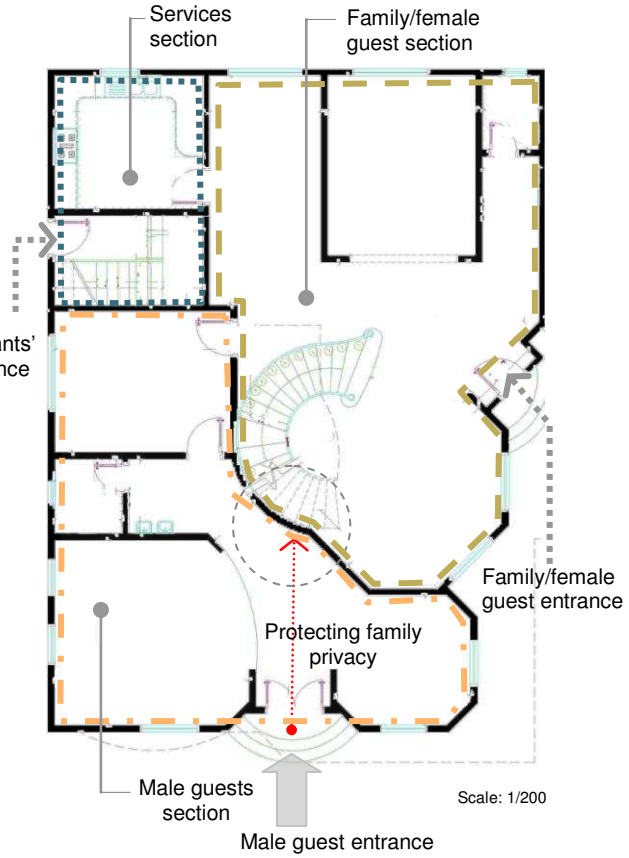


Fig 6.77: Villa house entrances; formal and informal



6.4.3.3 Internal Arrangement

Previously, the regulations stated that houses should be no higher than two storeys. However, the most recent requirements for planning permission (2012) allow for development of a third storey provided that: its floor area is no greater than 50% of the house footprint, it is located at the back of the plot and the roof created at the front of the building should be inaccessible and unused.

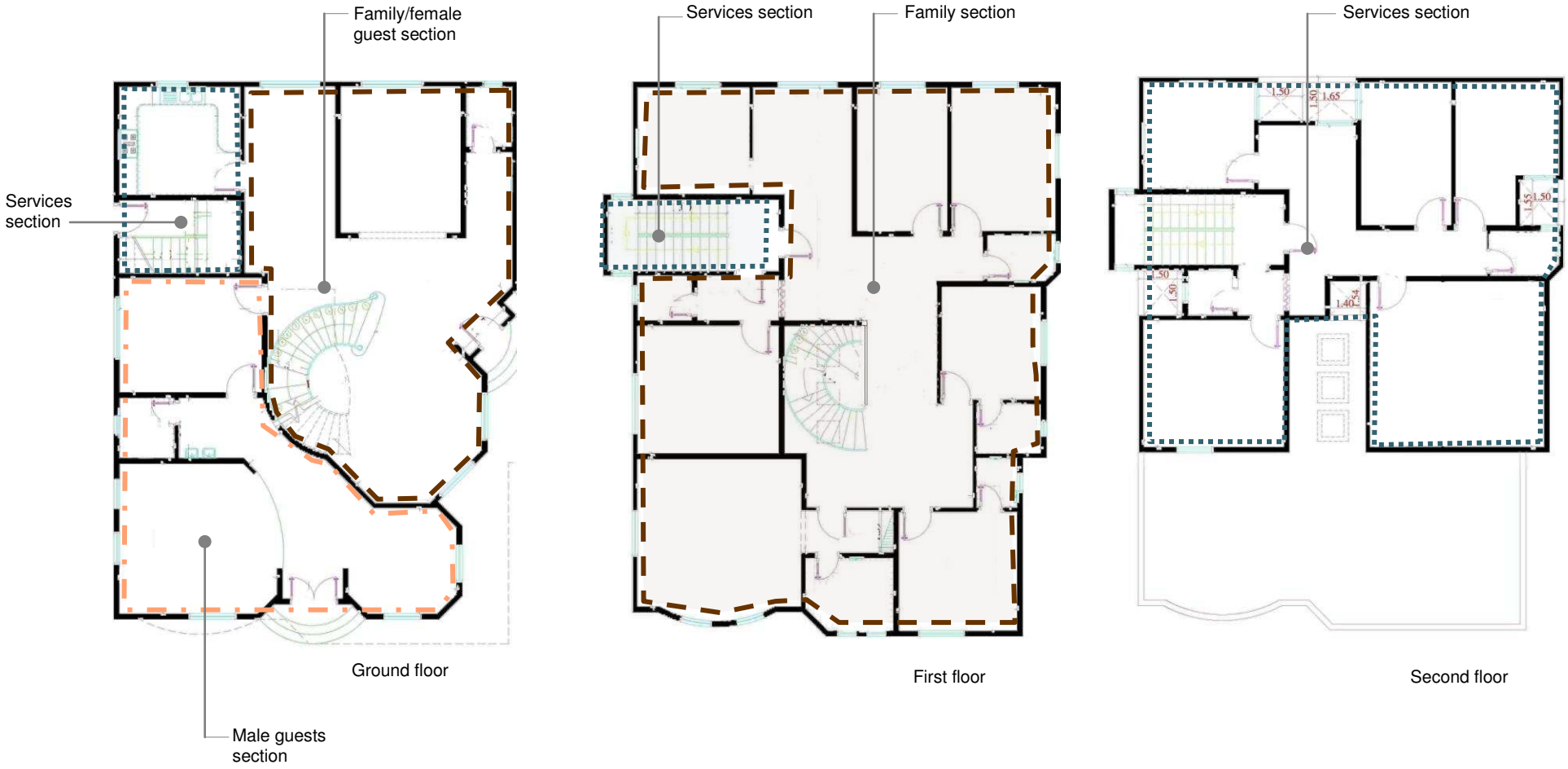
The house is essentially divided into three parts, representing the three different categories of users; i.e. male guests, female guests and family, and staff. The ground floor is divided into two principal areas. Space for male guests is situated at the front to minimise their access into the centre of the house. The family and female guest area is located at the centre and back of the ground floor to avoid contact with the male guests.

The first floor is completely devoted to the family section except for the service staircase. The second floor is the private area for the female staff. In this case, the female staff constitutes one housemaid. The other spaces are vaguely labelled as storage. It could open a debate as to whether the second floor is strictly necessary, especially as the kitchen is located on the ground floor. There was some discussion among the family that when the eldest son is married, his family may take over the second floor. If that were to occur, perhaps the housemaid would be offered a separate ground floor annex with easy access to the kitchen. For the present, this is merely speculation (see Figure 6.78).

It is noted that the male guest area is given great prominence as it takes up at least one-third of the ground floor and the whole front facade. It is also directly connected to the front yard (the only yard worthy of the name) even though male guests are less frequently present than the family. As a result, the front yard seems like a less private space that is not exclusively available to the family. In addition, the presence of the chauffeur around the yard when manoeuvring one of the cars lessens its attractiveness as a usable space.

It is evident that the overall arrangement of the house helps to maintain the privacy of the family but that there are compromises in the use of external space.

Fig. 6.78: Villa house arrangement – three different sections



6.4.3.4 Nature of the Spaces

The family lounge is at the heart of the house, and constitutes the main space where the family gathers either to enjoy a meal or to have a drink of coffee or tea and to enjoy watching TV. The furniture consists of sofas, chairs and tables. However, the family normally prefers to sit on the floor when drinking coffee or eating a meal. The family dining space has a table, and is used mostly for breakfast. The main staircase is located very close to the family lounge, which means that family members can move easily up to their bedrooms on the first floor.

The male guest area has two different types of sitting space. One is in the Arabic style, with seating in the form of cushions along three walls. The other space is in the western style, with sofas, chairs and tables as furniture. These spaces are only used for sitting, as the guest dining room is also used for sleeping. In the case that the guests are a couple, it is possible that they sleep together. However, if they are male, whether relatives or not, they sleep together in the same room using mats, leaving a space between them to provide comfort and privacy.

For the female guest room, only western-style furniture is used. It is evident that the guests' spaces are bigger than the family spaces and even have different styles of furniture, emphasising the significance of guests. The dining room is mainly used for male and female guests, so it has to be accessible from two different sides to serve both types of user. It has no table or chairs, as guests sit on the floor to eat. When there are no guests in the house, which is the case most of the time, the dining room remains closed and is not used.

The kitchen represents part of the service area where the food is prepared by the housemaid under the supervision of the mother of the family. It is located adjacent to the service staircase in order to connect the service areas on the ground and second floors.

Regarding the first floor, it is used for sleeping by the family only. It consists of seven bedrooms including the master bedroom. In addition, it has five bathrooms, three of which are en suite. As previously noted, the second floor is used for the housemaid’s room, as well as for the laundry and storage rooms.

All spaces meet the need for natural light and ventilation through narrow external spaces and setbacks, except for the male guest area, the master bedroom and two other bedrooms which overlook the front of the house (see Figure 6.79).

Fig. 6.79: Villa house – activities and spaces

Ground floor
1. Entrance lobby
2. Arabic seating
3. Modern seating
4. Guest dining
5. Family lounge
6. Female guest room
7. Family dining
8. Family staircase
9. Kitchen
10. Service staircase
11. Toilet

First floor
12. Bathroom
13. Bedroom
14. Children's corner
15. Master bedroom

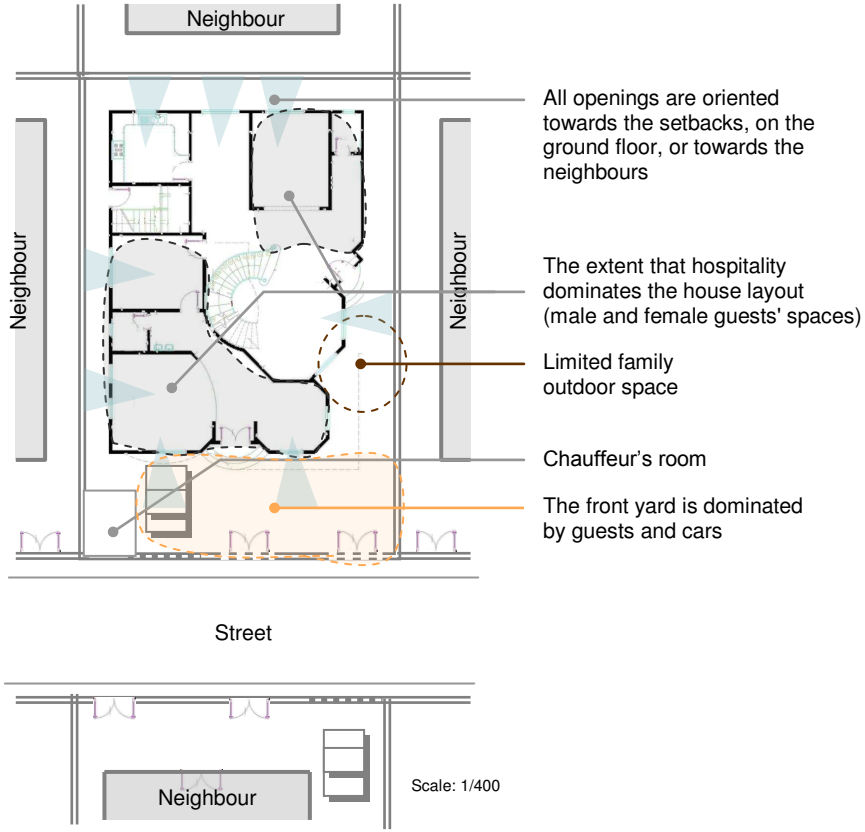
Second floor
16. Laundry
17. Housemaid's room
18. Storage
19. Unusable roof deck

It is evident that the issue of hospitality dominates the house layout, clearly demonstrated by the allocation of what appears to be the main entrance to male guests. In addition, some of the major spaces are specified for the use of guests only. This, in turn, has carved out a fairly large area of the property and the lack of suitable outdoor space directly connected to the family part of the house (see Figure 6.80).

6.4.3.5 Materials and Construction

According to Mubarak (2004, 2007), contemporary house designs have been imported, which explains why they only work with modern building materials. Concrete blocks in two different sizes are used for the walls. The blocks in the external walls are thicker, as they contain compressed polystyrene as thermal insulation (Figure 6.81). Reinforced concrete is used in roofs, floors, columns, beams and foundations (Figure 6.82). The use of reinforced concrete speeds up the building process and allows the building to have longer spans and larger spaces. There is also flexibility offered by the framed structure. The window frames are in aluminium, glazed with frosted glass that prevents any views in or out (see Figure 6.83). These windows do not open.

Fig. 6.80: Villa house – the influence of hospitality



As a result, the household constantly relies on air-conditioning to achieve climatic comfort. Steel and Lexan are used for external doors so as to ensure better safety and security for the house (see Figure 6.84).

The concrete blocks are clad in locally sourced stone, in different sizes and thicknesses on the main facade of the house. Marble, porcelain and ceramic tiles are used for floors as well as for walls of the bathrooms and toilets. It is evident that most of the modern building materials used in this house are not locally sourced. As Mubarak (2007) points out, the social status of the owner is closely associated with the use of lavish building materials.

Fig. 6.81: Cement block with thermal insulation – polyester

Fig 6.82: Villa house structure system

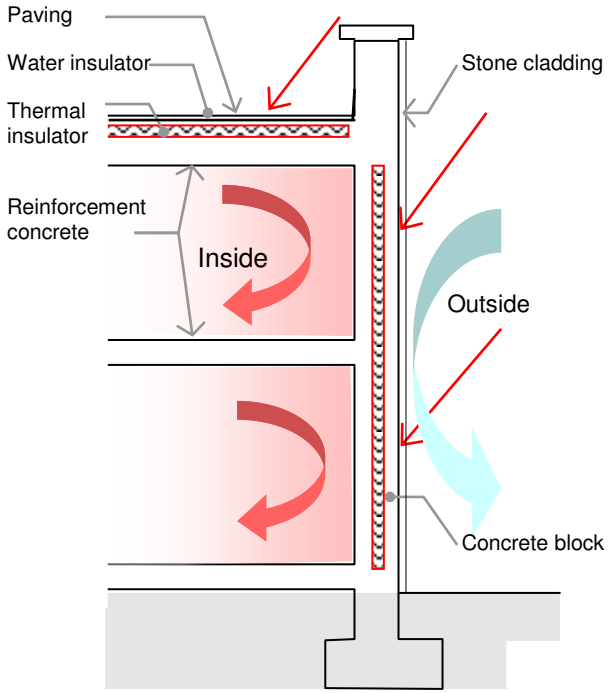


Fig. 6.83: Window style in the villa house

Fig 6.84: Main entrance door of the villa house

6.4.4 Summary

The most significant aspect of this part of the study is the importance of guests in both house types. It is unusual in worldwide housing design that such provision should be so influential. The separation between male guests and the family and female guests, either vertically as in the courtyard house, or horizontally as in the villa type, is fundamental to the design of these houses. However, there is a difference in terms of family living. It could be argued that the family is accommodated around the courtyard as the primary priority, whereas in the villa house, family living is only given a secondary priority to the male guest rooms. There is an interpretation of the villa house that prioritising male guests is an expression of status.

The villa house demonstrates the complexity of contemporary lifestyles. It needs to accommodate the family, guests and staff. Given the cultural need to honour guests, the needs of the family and provision for staff, this is probably one of the most complicated sets of requirements in housing design. The outward-facing nature of these houses presents difficulties with privacy that leads to a lack of views and natural ventilation. The requirement for setbacks on all sides is a perplexing regulation as it creates uncomfortable margins of external space. It has been a traditional principle that openings on to different houses should not face each other directly. This is extremely difficult to achieve in the villa type, and therefore windows are glazed with frosted glass and sealed so that they cannot be opened. Consequently, villa house residents rely on electrical power day and night, for lighting and air-conditioning.

In terms of building materials, the courtyard house is characterised by local, inexpensive and easy to use materials, making the house adaptable to use and regulate the climate. The villa house is almost entirely dependent on imported building materials, which are expensive and require sophisticated techniques to be implemented. Moreover, the villa house requires considerable technology to be used.

The outcome of this study is that neither house type totally meets the needs of residents. The courtyard house meets the needs of privacy and protection from the climate but is too small in overall terms and in the nature of each space. It also has no response to 21st century needs, such as the use of vehicles. The villa house is very large by comparison and meets all accommodation needs. However, it is inadequate in terms of privacy and outward views. It also lacks natural light and ventilation, with a huge reliance on

electrical power for light and air-conditioning. Moreover, there is no provision for the comfortable use of external space.

The challenge, therefore, is to respond to the best features of both house types, and devise a set of guidelines for house design that will satisfy all the needs of residents and their guests.

6.5 Conclusion of Data Collection

The investigation of the concept of Home comprised three categories:

- Human needs – climatic comfort, safety, security, privacy, status, and external appearance
- Place – attachment, identity, symbolism, location, and environment
- House – types, threshold, arrangement of spaces, nature of spaces, and materials and construction

This involved four data sets:

- Questionnaire of human needs (400 × 2 = 800 respondents)
- Semi-structured interviews of human needs to investigate the effect of changes to the properties, compared with no changes (20 × 4 = 80 respondents)
- Semi-structured interviews of place (40 × 2 = 80 respondents)
- Building analysis (1 + 1 = 2)

a. Human Needs

Although there were minor variations, the results of the human needs questionnaire is summarised by Figure 6.49. While the courtyard house scored poorly in terms of status and external appearance, it scored well for climatic comfort, safety, security and privacy. Yet, there were a significant number of instances where residents had added provisions, in an attempt to improve all four issues (see Table 6.1).

It was therefore decided to interview heads of households in 20 courtyard houses where no changes had been made and 20 where changes had been made, to ascertain their effectiveness. While there were instances of marginal perception of improvement, the majority view was that the changes had made little difference; whereas, status and external appearance remained the predominant issues of concern.

.

Fig. 6.49: Comparison of issues with Maslow's hierarchy of needs

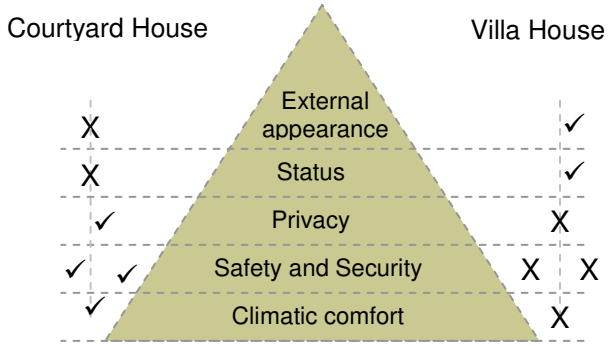


Table 6.1: Various means used to improve climate comfort, security, safety and privacy

		Climate cond.	Security	Safety	Privacy
Outdoor	Roof the yard	40	10	4	
	Raising the roof parapet		36		24
	Renovating mud walls annually	94			
Indoor	Alarm system				
	Metal bars over windows		48	49	
	Adding any kind of curtains to windows				
	Partially reducing the size of windows or blocking them		18	27	8
	Adding air-conditioning units	106			
	Total	240	112	80	32

The results from villa house questionnaires showed that climatic comfort, safety, and security and privacy are major deficiencies. Thus, significant numbers of households had made modifications to their houses – almost equally across all four issues (see Table 6.2).

A similar sample of 20 villa houses without modifications and 20 with modifications revealed high levels of dissatisfaction with climatic comfort, safety, security and privacy – regardless of whether modifications had been made or not. The interviews confirmed that, in principle, the courtyard houses perform relatively well in terms of climatic comfort, safety, security and privacy, compared with villa houses which offered good responses in terms of status and external appearance. Thus, according to the residents, neither of these house types totally satisfies their human needs.

b. Place

The same 80 heads of household were interviewed for their impression of place where they live. The results showed that the residents in a traditional built environment of the courtyard homes are more involved with opportunities in their built environment, due to spatial features that are rooted in a cultural context. These include narrow winding alleys, hierarchal open spaces and inward-oriented houses. These features, in turn, play a significant role in connecting residents to their environment, and contributing to their identity and meaning.

By contrast, the trend towards individualism in the contemporary built environment, exemplified by the villa houses, expresses the separation of properties through setbacks and wide streets. Also, the lack of socio-cultural domains such as community centres weakens residents' attachment to their environment.

Table 6.2: Various means used to improve climatic comfort, security, safety and privacy

		Climate comfort	Security	Safety	Privacy
Outdoor	Roofing the yard partially or completely	74		6	30
	Raising the fence/parapet		76	94	92
Indoor	Alarm system		8		
	Metal bars over windows		103	53	
	Adding any kind of curtains to windows	66			72
	Partially reducing the size of windows or blocking them		5	3	14
	Increasing/ changing air-conditioning units	80			
	Total	220	192	156	208

Moreover, there are no social activities or events that may help to enhance the sense of belonging.

The results illustrated that the physical setting and building features of the contemporary built environment are not integrated with the indigenous environment. Planning responds to 21st century lifestyles, such as the reliance on the use of cars. The desire for status – using modern styles and novel building materials – seems to dominate the form of the houses, and has swept away any original identity and affiliation to the surrounding environment. Overall, the design of the contemporary environment of house and neighbourhood emphasises separation between the two – through artificial interior climate control, communication technologies and travel by car. It has negatively influenced residents' sense of belonging as well as increased their lack of identity with the house and the entire built environment.

c. House

During the *Place* interviews, one typical courtyard house and one typical villa house were analysed in terms of: thresholds – the division between the public and private domains; arrangement of spaces for different user groups; nature of spaces – for types of activities; and finally, building materials and construction. The evidence shows that the separation between male guests and the family/female guests (either vertically as in the courtyard house or horizontally as in the villa house) is fundamental to both types. However, there is a difference in terms of the family living. It could be argued that the family is accommodated in the location of primary importance, i.e. around the courtyard; whereas in the villa house, family living is given second priority to the male guests.

The requirement for setbacks on all sides of the villa house is a perplexing regulation as it creates uncomfortable margins of external space. Yet, the objective seems to be that it creates a neighbourhood of predominantly detached houses. It has been a traditional principle that openings to different houses should not face each other. This is extremely difficult to achieve with the villa type and, therefore, windows are glazed with obscured glass and sealed so that they cannot be opened. Consequently, residents rely totally on electrical power, day and night, for lighting and air-conditioning. In terms of building materials, the courtyard house is characterised by local, inexpensive and easy-to-use materials, making the house and its climate adaptable. The villa house is almost entirely dependent on imported building materials, which are expensive and require sophisticated techniques to be implemented. Moreover, the villa house needs considerable technology to be in use.

The outcome of this study is that neither house type totally meets the needs of residents. The courtyard house meets the

needs of privacy and protection from the climate but is too small in overall terms and in the nature of each space. It also has no response to 21st century needs, such as the use of vehicles. The villa house is very large by comparison and meets all the accommodation needs. However, it is inadequate in terms of privacy and outward views. It also lacks natural light and ventilation, with a huge reliance on electrical power for light and air-conditioning. Moreover, there is no provision for the comfortable use of external space.

The challenge, therefore, is to respond to the best features of both house types, and devise a set of guidelines for house design that will satisfy all the needs of residents and their guests. The guidelines will be based on the positive and negative features of each house type and its neighbourhood, as set out in Table 6.3 following.

Table 6.3: Final conclusion of data collection

Home Principles		Courtyard House		Villa House	
		Positives	Negatives	Positives	Negatives
Human Needs	Climatic Comfort	• good shading, reduce exposure to solar radiation, create more comfortable micro-climate and reduce energy waste • courtyard acts as a temperature regulator; providing shade in summer and retaining cool air at night • three party walls are protected from heat gain during the day; all openings are oriented toward the courtyard, which acts as a natural light source, as well as natural ventilation • top-up air-conditioning is sufficient	• low resistance to sandstorms, as courtyard is open to outside air	• high resistance to sandstorms, as no direct connection between inside and outside spaces	• comparatively large areas of exposed walls and windows increase exposure to solar radiation • air-conditioning units require regular and expensive maintenance • consistent increases in temperature require regular upgrading of air-conditioning capacity. Residents are constantly dis-satisfied with performance
	Safety	• at the neighbourhood level, layouts based on narrow winding alleys inhibit access by strangers. Open spaces and clustering of houses enhance livability and natural surveillance • at the house level, there is limited access due to the inward oriented dwelling	• access to the flat roof from adjacent properties can enable access by intruders	• no party walls prevent intruders' access at roof level	• at the neighbourhood level, grid layouts with wide streets and lack of external spaces, weakens the social fabric, contributes to declining livability and natural surveillance, and compromises safety • at the house level, safety is negatively affected by large external openings • residents construct 3–6-metre-high fences around houses and fix metal mesh over windows, to improve safety by inhibiting intruders
	Security	• all issues related to Safety also relate to Security			

	Privacy	• houses oriented inwardly and all family spaces open onto a private courtyard. • entrances do not face each other across the street or alley	• noise across the flat roofs can disturb people relaxing or sleeping there	• few party walls between houses and very limited use of roofs for relaxing and sleeping	• the setbacks on all four sides creates detached houses. There are no internal courtyards, so all windows are on the perimeter of the houses, facing towards neighbours. Thus all windows are sealed and covered, or otherwise obscured, to prevent overlooking. • to protect indoor and outdoor spaces from overlooking, screens are located around the properties. These adversely affect the use of the outdoor spaces, and create dark interiors
	Status	• Islamic culture encourages equality – these houses are so characterised by uniformity that even the extent of each property cannot be determined from the street	• none	• these houses are characterized by contemporary design concepts, and latest building materials and construction techniques – according to the residents' need for status	• there is a lack of equality affecting community spirit
	External Appearance	• benefits from local, natural building materials • integrated with local environment and culture	• materials and construction mitigates against architectural features and decoration	• variety of architectural designs and styles – with balconies and large windows, and latest materials and construction • meets residents' desire for contemporary appearance	• not integrated with local environment and culture
Place	Attachment	• at both levels – neighbourhood and house – residents have opportunities to engage with the environment, which helps their relationship with the locality	• none	• residents drift towards their bedrooms where interaction is with social media	• separation of properties and lack of socio-cultural domains weaken residents' attachment to neighbourhood and house
	Identity	• at both levels - neighbourhood and house – features such as: organic urban fabric, inward orientation and natural materials reflect residents' cultural norms	• does not meet residents' aspirations for personal identity e.g. narrow alleyways cannot accommodate cars and the house does not lend itself to modern furnishings	• this type meets residents' aspirations for personal identity	• at both levels – neighbourhood and house – grid patterns and wide street planning, imported architectural styles, and novel building materials do not suit environment and culture

	Symbolism	• the setting contributes to meaning for residents – open spaces within the neighbourhood and the courtyard within the house offer opportunities for social and family interaction, which deliver symbolism	• none	• none	• residents are not engaged with their surroundings, which in turn cannot offer them symbolism
	Location	• locations within a neighbourhood have shared meaning for the community	• none	• topographical and environmental characteristics do not vary	• house location is determined by functional issues such as services, public utilities and facilities
	Environment	• the setting of the house represents linkage with the external environment through hierarchal of open spaces: public, semi-public, semi-private and private	• none	• none	• the setting of the house represents separation from the external environment through artificial interior climate control, communication technologies and travel by car
House	Types	• none	• constrained footprint and limited number of rooms	• none	• setbacks required on all four sides of the house – minimum of 2 metres or 20% of street width. • footprint restricted to 60% of the site area • layout necessitates windows to be located on perimeter of the house, which adversely affects privacy of neighbours' houses; resulting in erection of screens to assure family privacy • layout exposes all external walls and windows to the sun
	Threshold	• operates as a clear division between public and private domains		• operates as a transition between the public domain and the front yard as a semi-private domain	• does not designate a private domain for the household – compromised by male guests and overlooking by neighbours
	Arrangement of spaces	• the house is divided into two sections - male guests, and family/female guests • areas for male guests and the family/female guests are separated vertically		• The house is divided into three sections - male guests, family/ female guests, and staff. • areas for male guests and the family/female guests are separated horizontally	• prioritising male guests is an expression of status • the family/female guests are given second priority to the male guests

	Nature of Spaces	• family/female guests are given the primary location around the courtyard • courtyard serves as a private open space and a place for social celebrations	• the size of rooms is very limited – rarely exceeding 2.5 metres wide, and inadequate to accommodate modern furniture.	• large house size and number of rooms meet residents' desire for status.	• large house size exceeds residents' needs • duplication of spaces • furniture in living space does not reflect residents' culture • uncomfortable margins in external spaces – generated by setbacks
	Materials and Construction	• materials are locally available, natural, inexpensive and easy to use • mud walls function as thermal time-lag - storing heat during the hot days and slowly releasing it during the cool night	• structural system limits floor spans to typically 2.5 metres • short span roof structure limits the overall size of the house • traditional methods of restrict speed of construction	• concrete block walls are durable and resistant to rain. • new building materials and construction techniques are suitable to the new architectural design concepts and contemporary furniture • unlimited supply of materials fits with residents' desire for status through external appearance of house	• materials are imported, machine-made, expensive and require sophisticated assembly techniques

The Proposition: A Design Guide

Chapter 7: **The Proposition: A Design Guide**

7.1 Introduction

In the previous part of this study, an investigation was carried out on the basic principles of home: human needs, place and house. The analysis of the results indicates that the current residential environments at both levels – neighbourhood and house – are incapable of expressing the true notion of home. This shows a real need for some design guidance which, if complied with, will result in higher-quality residential environments that meet the residents' aspirations and, at the same time, respect the surrounding environment.

7.2 The purpose of the Guide

The purpose of the Guide is, therefore, to address each principle of the home. It seeks to achieve new development that combines the best of past experience – the courtyard house – with the needs of modern life – the villa house. Although much of the Guide's focus is on traditional architectural solutions, it should not be viewed as restricting the use of creative and innovative contemporary designs. Hence, the Guide seeks to foster a common understanding among the local authorities and development industry of what home means and how to achieve it.

The end result will be places that are successful living environments with a sense of home, integrated into the surrounding environment; climatically comfortable; safe and secure; ensuring privacy; local, distinctive and attractive.

7.3 What examples are there?

There are several examples of such a residential design guidance, e.g. Essex Design Guide for Residential and Mixed Use (2005); Wealden Design Guide (2008); and South Yorkshire Residential Design Guide (2011). Each of these has its own way of treating specific issues relevant to a residential environment. The purposes of these guides differ from one to another. However, in general, all of them aim to create residential environments of higher quality that meet residents' needs while at the same time respecting their unique identity.

7.4 Who should use the Guide?

This Guide is for use by residential developers – individuals, organisations, professionals, consultants and agents – in formulating designs and making applications for permission to build residential developments in Riyadh, Saudi Arabia. Furthermore, the Riyadh

Municipality is responsible for monitoring the implementation of this Guide.

7.5 Why is it presented in this way?

The Guide is designed in a way that describes the negative and positive features of both types of house – courtyard and villa – and how to avoid these drawbacks as well as take advantage of the positives. The Guide covers all fifteen aspects, starting with the main three principles of home: first, *human needs* – climatic comfort, safety and security, privacy, status, and external appearance; second, *Place* – attachment, identity, symbolism, location, and environment; third, *House* – types, threshold, arrangement of spaces, nature of spaces, materials and construction.

Each page is divided into two parts: the current situation on the left, and design guidance on the right. Under the current situation, negatives regarding the courtyard house come first, followed by the negatives of the villa. On the right-hand side (below the design guidance), there are some guidance tips that explain how to avoid these drawbacks. Next, the positives of each type are presented under the current situation in the same order as the negatives.

It must be emphasised that the Guide should not be seen as a definitive statement as it cannot cover all possible planning and design issues.

7.6 What scale of development is covered by the Guide?

This set of design guidance is applicable to all types of development: individual (by the homeowner), or groups of houses (by investors or organisations). Nevertheless, it would be quite appropriate to use it for large developments or groups of houses, where it would be much easier to manage and assess several issues at the same time; e.g. ease of control and being able to avoid openings on to neighbours' courtyards. In addition, it would help to ensure that entrances did not face each other.

On the other hand, development of a group of houses – a cluster or neighbourhood – provides an opportunity to develop an integrated community in terms of the movement of pedestrians and vehicular traffic, and the possibility of separating them to ensure pedestrians' safety. Moreover, it helps to control the entrances and exits of the residential environment in order to ensure the highest levels of safety and security. Finally, dealing with the scale of a residential neighbourhood should help to achieve a balance in the distribution of public services. This would encourage people to walk and thus reduce their dependence on cars to move between their homes and other public services. In turn, this would improve several issues such as climatic comfort, safety and security,

privacy, and would engender a sense of attachment.

While there are significant benefits to be had from reading the whole Guide, once you become familiar with the overall structure, you may prefer to approach it in a different way, depending on your immediate needs.

7.7 Status of the Guide

The Guide should complement and support the *Technical Requirements for Permission to Set-Up Villas and Residential Buildings* (2006) produced by the Ministry of Municipal and Rural Affairs (Municipality of Riyadh Region).

Despite that, other elements related to a residential environment are not covered in this Guide as minor priorities – such as alternatives to the design of the facades of houses, the design of the fences, how to take advantage of the roof as a private space, pavement design and furniture, and so on. All of these elements need to be studied and prepared by competent authorities such as the Ministry of Municipal and Rural Affairs (MOMRA), represented in the Municipality of Riyadh Region, and in cooperation with the College of Architecture and Planning at King Saud University. This should be in light of the different experiences of similar climatic environments.

7.8 Where to find what you need?

The Guide has been arranged to cover three main principles that are further subdivided into fifteen issues, as follows:

Human Needs

- Climatic comfort
- Safety and Security
- Privacy
- Status
- External appearance

Place

- Attachment
- Identity
- Symbolism
- Location
- Environment

House

- Types
- Threshold
- Internal arrangement
- Nature of spaces
- Materials and construction

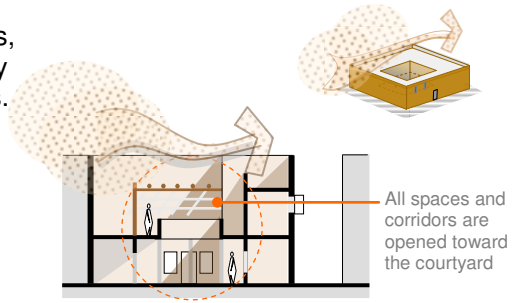
7.9 Design Guidance

The following pages present the proposed design guidance for residential neighbour-hood and villa home.

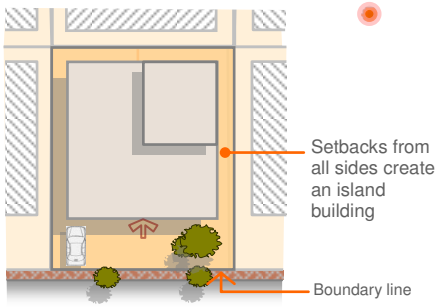
Climatic Comfort: 1

Current Situation

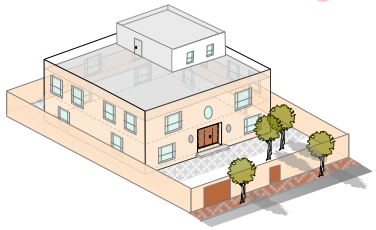
- Low resistance to sandstorms, as internal spaces are directly connected to external spaces.



- Comparatively large areas of exposed walls and windows increase exposure to solar radiation.



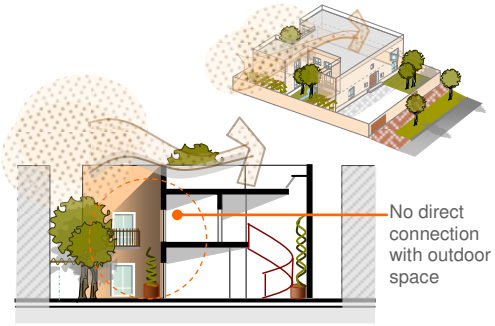
- Air-conditioning units require regular and expensive maintenance.
- Consistent increases in temperature require regular upgrading of air-conditioning capacity. Residents are continually dissatisfied with performance.



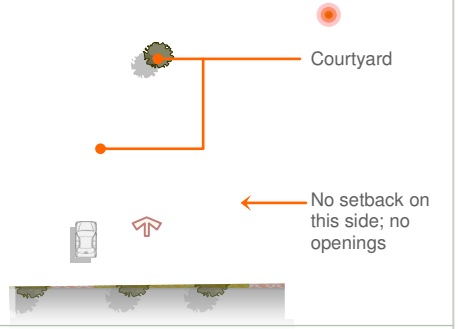
Large number and size of windows affects negatively on the performance of the air conditioning.

Design Guidance

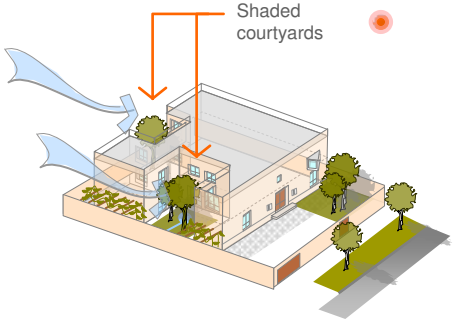
- Indoor and outdoor spaces are connected through transparent glass windows and doors that help to take advantage of view, natural light and ventilation while controlling ingress from sandstorms.



- One setback should be removed and no windows permitted on that side. Windows should be oriented toward shaded areas – courtyards – which would help in reducing solar radiation.



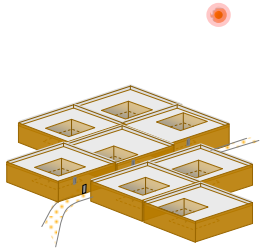
- Directing windows towards the courtyards reduces the exposure of rooms to the sun's rays and thus mitigates the load on the air conditioning. This in turn maintains the performance of the air-conditioners and reduces the need for maintenance.



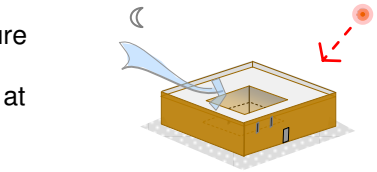
Climatic Comfort: 2

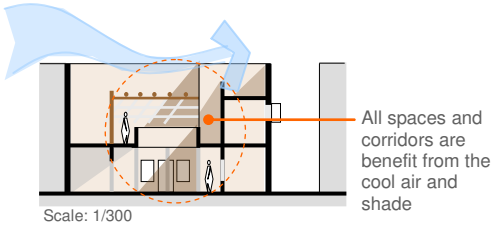
Current Situation

- Good shading reduces exposure to solar radiation, creates a more comfortable micro-climate and reduces energy waste.
- Three party walls are protected from heat gain during the day.

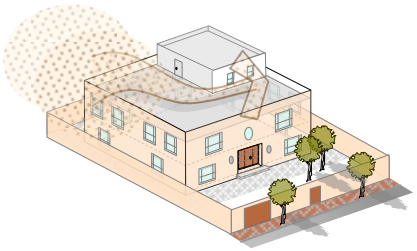


- Courtyard acts as a temperature regulator, providing shade in summer and retaining cool air at night.
- All openings are oriented toward the courtyard, which acts as a natural light source, as well as natural ventilation.
- Top-up air-conditioning is sufficient.



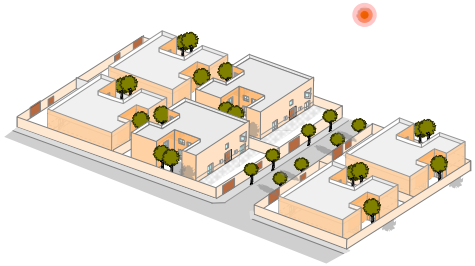


- High resistance to sandstorms, as no direct connection between inside and outside spaces.

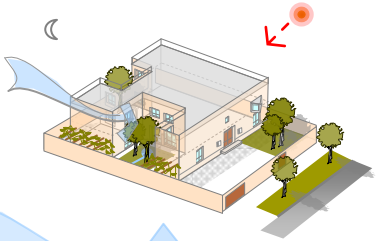


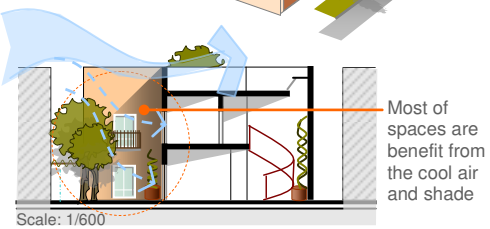
Design Guidance

- Using courtyards will help in creating good shading and reducing exposure to solar radiation. This in turn should create a more comfortable micro-climate.

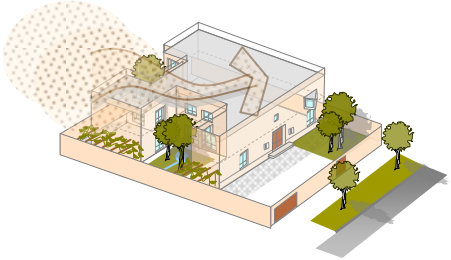


- Courtyards will help in directing all openings toward shaded areas which provide natural light and cooler air.





- Incorporating doors and/or windows between all inside and outside spaces will prevent sandstorms from entering the house.

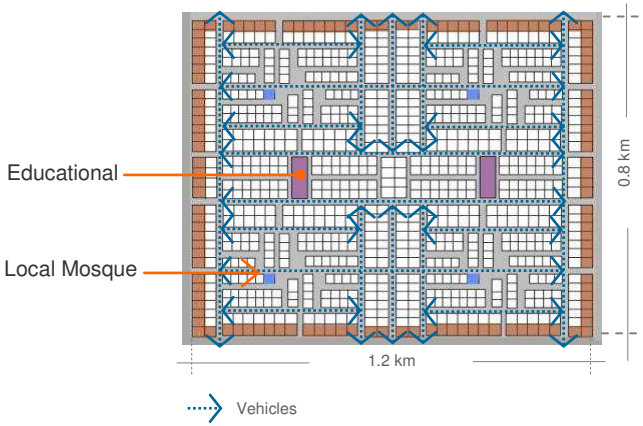


Safety and Security: 1

Current Situation

- At the neighbourhood level, grid layouts with wide streets and lack of external spaces weaken the social fabric, contribute to declining liveability and natural surveillance, and compromise safety.

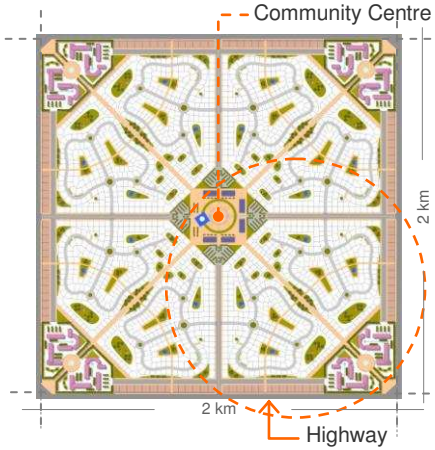
A typical urban planning for a neighbourhood



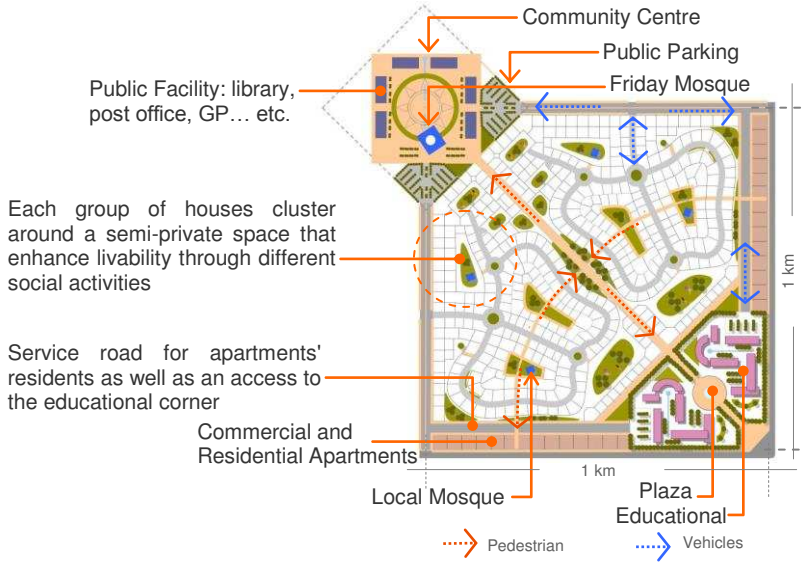
Crossroads affect pedestrians negatively

Design Guidance

- At the neighbourhood level, open spaces and a community centre should be emphasised as a focal point which everyone can reach on foot. Different activities can be set up for adults as well as for children in order to enhance liveability and natural surveillance, which in turn inhibits access by strangers.



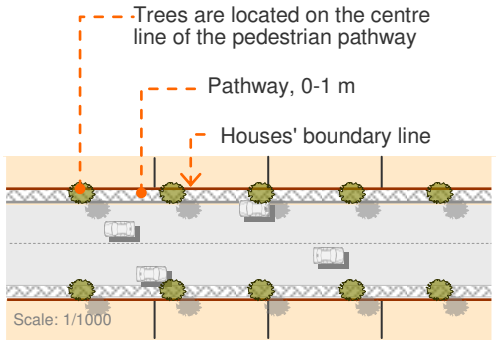
The proposed planning of a neighbourhood



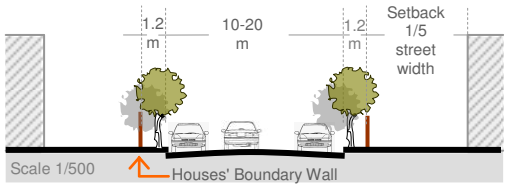
Safety and Security: 2

Current Situation

- At the neighbourhood level, grid layouts with wide streets and lack of external spaces weaken the social fabric, contribute to declining liveability and natural surveillance, and compromise safety.



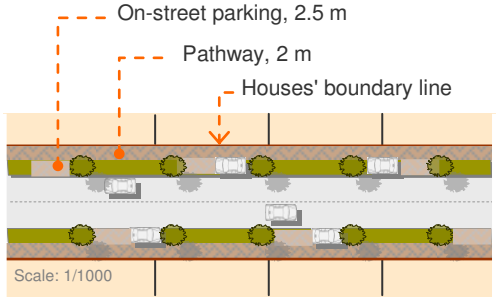
A typical street layout and pedestrian pathway



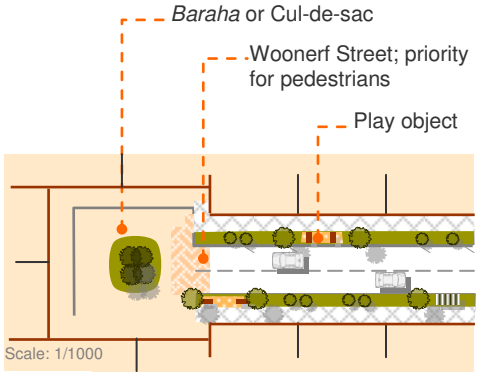
Cross-section through a typical residential street

Design Guidance

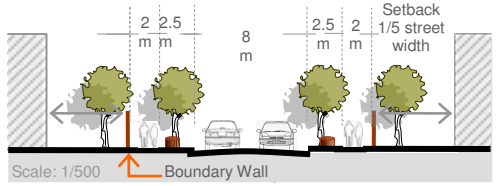
- Pedestrian pathway network connects parts of the neighbourhood with each other as well as with the community centre, schools and stores at the edge of the neighbourhood.



- Narrowing street width will help to create safe streets thus encouraging residents to use them for different social activities.



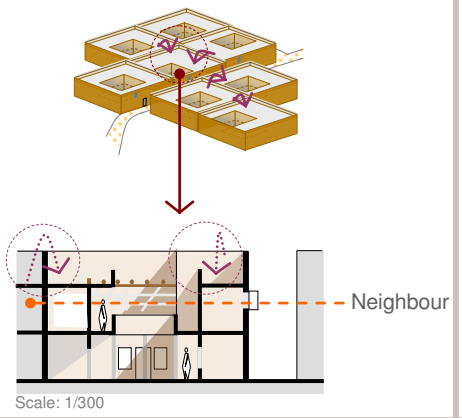
The proposed layout for a Woonerf street



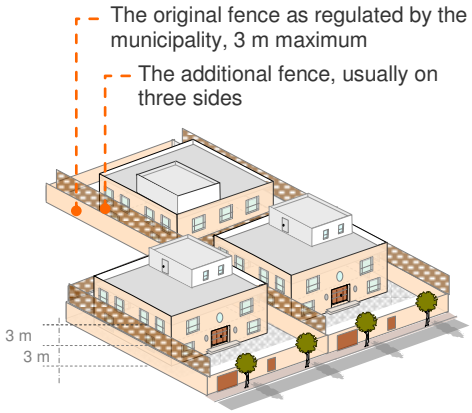
Safety and Security: 3

Current Situation

- Access to flat roofs from adjacent properties may enable access by intruders.

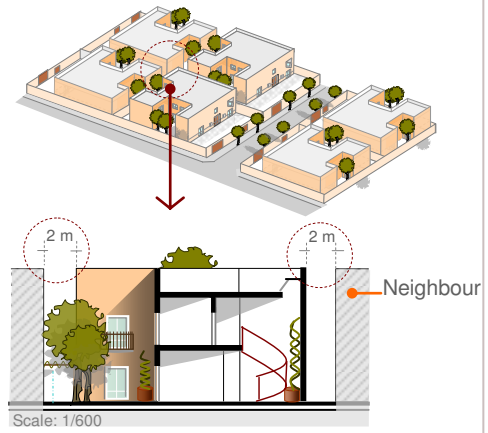


- At the house level, safety is negatively affected by the large number and size of external openings on all four sides.
- Residents construct 3–6-m-high fences around houses and fix metal mesh over windows to improve safety by inhibiting intruders.

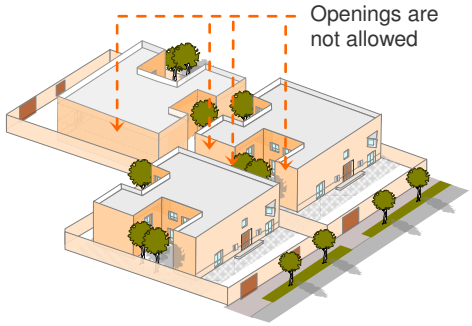


Design Guidance

- Houses should be detached on all four sides to prevent intruder access from roofs of adjacent properties.



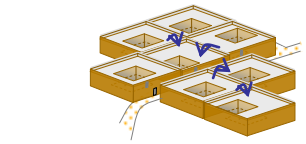
- External openings should be reduced to a minimum and arranged within the more private courtyard spaces. Openings at the less private front of the house should be limited to the male guest area.



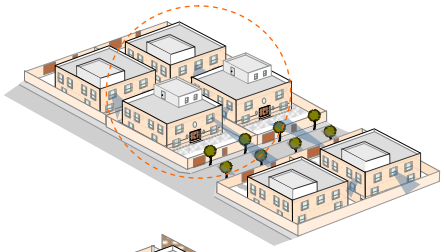
Privacy: 1

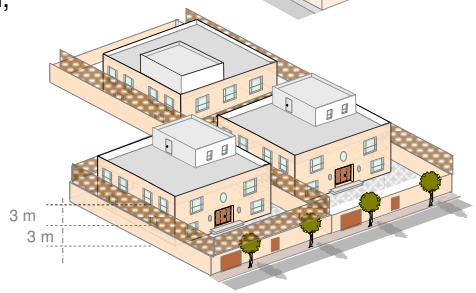
Current Situation

- Noise across the flat roofs can disturb people relaxing or sleeping there



- The setbacks on all four sides create detached houses. There are no internal courtyards, so all windows are on the perimeter of the houses, facing toward neighbouring properties. Thus, all windows are sealed and covered, or otherwise obscured, to prevent overlooking.
- To protect indoor and outdoor spaces from overlooking, screens are located around the properties. These adversely affect the use of the outdoor spaces, and create dark interiors.

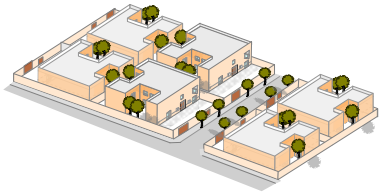


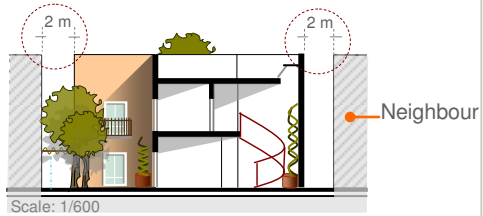


Screens are located either on three sides or all four sides.

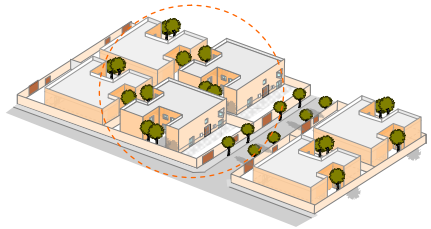
Design Guidance

- There should be no party walls between houses as these will adversely affect family privacy.

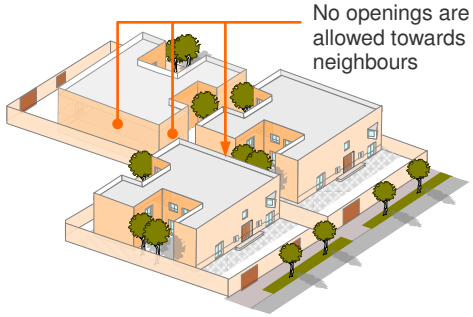




- Courtyards will help in relating openings to the family part of houses towards private spaces that do not face neighbouring properties. One of the setbacks should be omitted but houses should remain detached from adjacent houses.



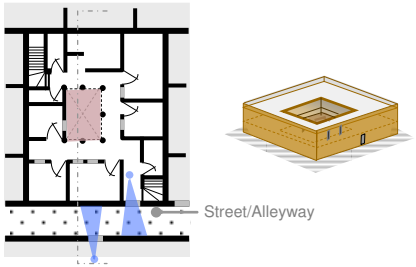
- By adopting the principle that gable walls facing neighbouring properties do not contain openings, all indoor and outdoor spaces are protected from overlooking without the need for screens.

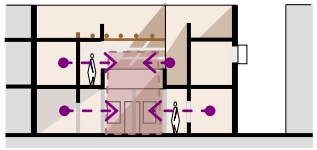


Privacy: 2

Current Situation

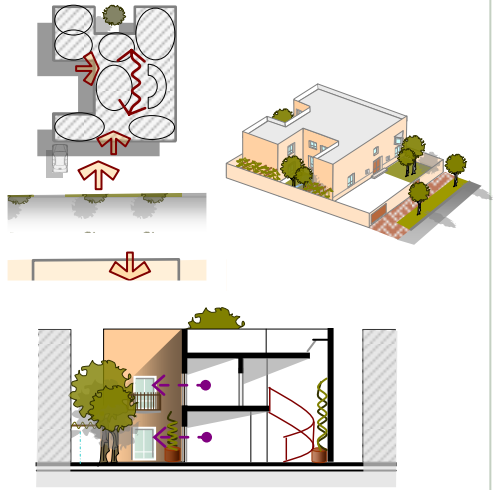
- Houses oriented inward and all family spaces open onto a private courtyard.
- House entrances do not face each other across the street or alley.





Design Guidance

- All family spaces open onto private courtyards.
- Entrances should not face each other, so that it is not possible to look into properties across the street.
- In the case where the rear courtyard faces the neighbours' courtyard, the height of the party wall should be increased in a way that protects their privacy.



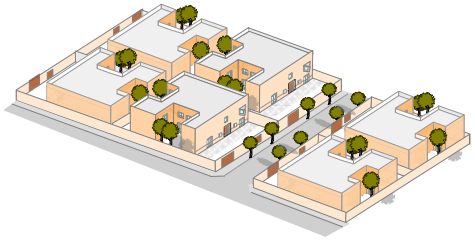
Privacy: 3

Current Situation

- No party walls between houses and very limited use of roofs for relaxing and sleeping.

Design Guidance

- Party walls should be avoided, to protect privacy of external activities at roof level.

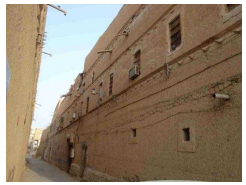


Status

Current Situation

- There is a lack of equality affecting community spirit.

- Islamic culture encourages equality – these houses are so characterised by uniformity that even the extent of each property cannot be determined from the street.



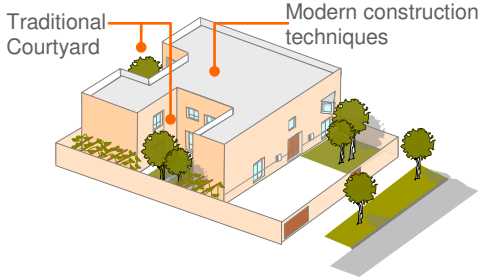
- Houses are characterised by contemporary design concepts and latest building materials and construction techniques, according to the residents' need for status.

Design Guidance

- The need to express status in the design of houses adversely affects community spirit. However, this can be redressed by the proposals for Attachment.

- Expression of status can be at least partially achieved by decoration to the front facade of houses.

- Contemporary design, modern building materials and construction techniques can offer status without losing the benefits of traditional features such as courtyards.



External Appearance

Current Situation

- Materials and construction type mitigate against architectural features and decoration.


Mud bricks


Palm tree trunks – for ceiling


Courtyard elevation

- Not integrated with local environment and culture.

Villa Elevation

- Benefit from local, natural building materials.
- Integrated with local environment and culture.


Window


Entrance Door

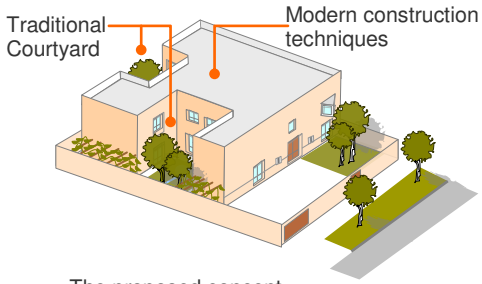
External Wall

Design Guidance

- Recent developments in traditional mud construction demonstrate that it is possible to incorporate architectural features and decoration with this material.

- The use of traditional local materials will allow houses to be integrated into the environment.

- The use of the courtyard principle will minimise the size and number of openings in the exposed external walls. As well as controlling solar radiation, this approach will meet the cultural needs of the residents.

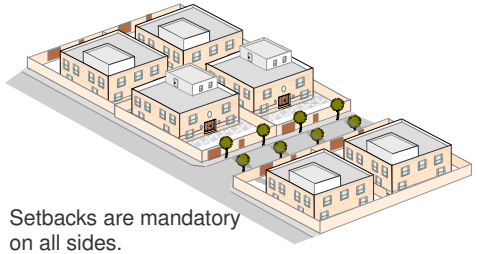


The proposed concept of villa-house

Attachment: 1

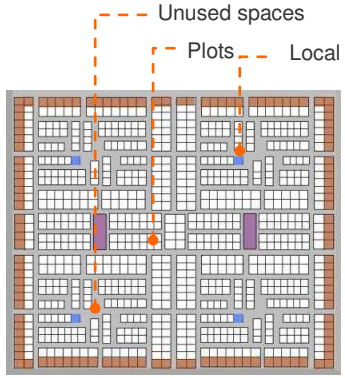
Current Situation

- Separation of properties and lack of socio-cultural domains weaken residents' attachment to neighbourhood and house.



Setbacks are mandatory on all sides.

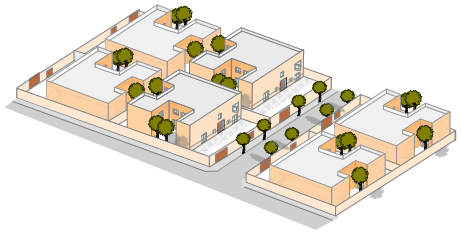
Undeveloped land, reserved for public facilities; to reach this area, residents have to cross main street(s) in addition to several local streets that have no pedestrian pathways

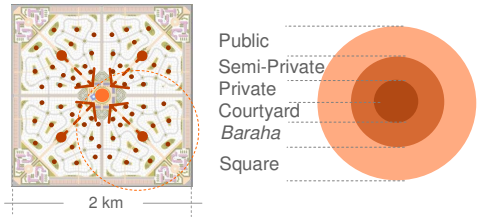


Lack of socio-cultural domains; a typical neighbourhood consists of a group of houses separated by wide streets. Local mosques are used just for worship.

Design Guidance

- A spatial hierarchy that groups clusters of houses around public squares at the neighbourhood level; and small numbers of houses around semi-public open spaces at the local level – will enhance the sense of attachment to place. All houses will remain detached.





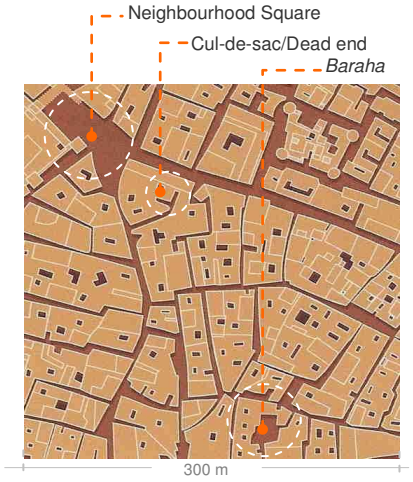
Pedestrian street – a public open space enabling residents, including children, to share different activities, and connecting houses with the community centre.

Each group of houses are clustered around a semi-private space that functions as a socio-cultural domain where children, female and male can use for different activities, which in turn would enhance the sense of attachment between residents and their neighbourhood.

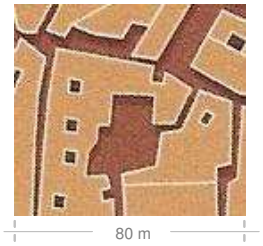
Attachment: 2

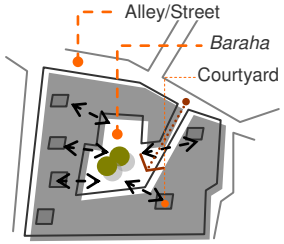
Current Situation

- At both levels – neighbourhood and house – residents have opportunities to engage with the environment, which helps their relationship with the locality.



Baraha – a semi-public open space, where neighbours, mainly women and children, from a particular cluster can gather and participate in several social activities.



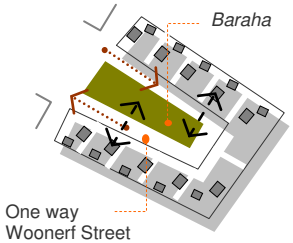


Design Guidance

- The neighbourhood will have various opportunities for residents to engage with their environment; including a Community Centre comprising public facilities located around the neighbourhood squares.

- Pedestrian streets will connect each part of the neighbourhood with the others and provides safe paths for women and children as well as for male adults.

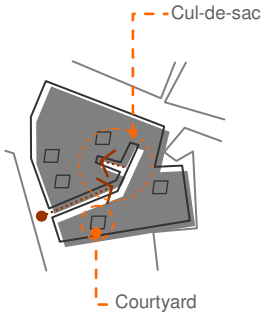
- The concept of the *baraha* will be reinstated, particularly to provide social activities for women and children.



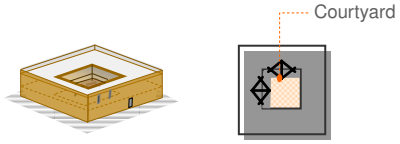
Attachment: 3

Current Situation

Cul-de-sac or dead end alley is a semi-public space serving a small group of houses.



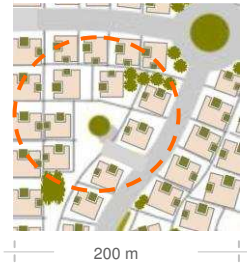
The courtyard constitutes a major space in the house where the household members gather and share different activities.

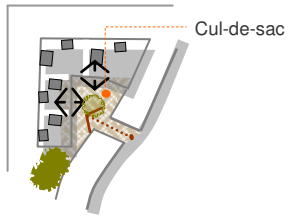


- Residents drift toward their bedrooms where interaction is with social media.

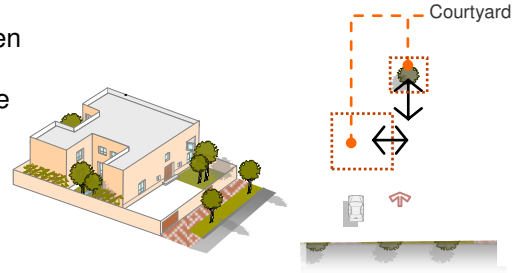
Design Guidance

- The principle of the cul-de-sac will provide safe and identifiable external spaces for families – especially where formed into a *baraha*.





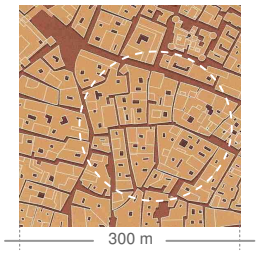
- Within properties, private open courtyards will allow family members to gather and share family activities.

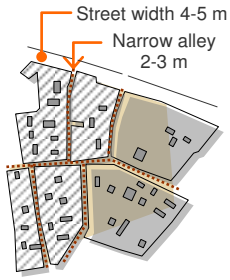


Identity: 1

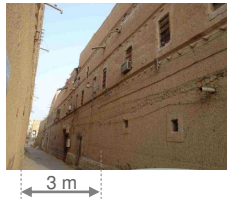
Current Situation

- Does not meet residents' aspiration for personal identity, e.g. narrow alleys cannot accommodate cars and houses do not lend itself to modern furnishings.



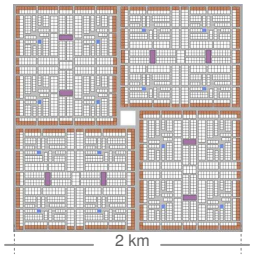


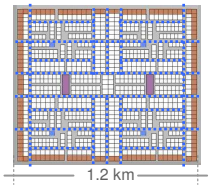
Courtyard house —internal



Uniformity of building materials and architectural details

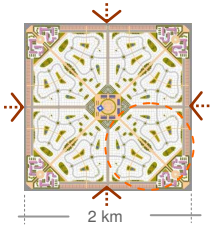
- At both levels – neighbourhood and house – grid patterns and wide street planning, imported architectural styles, and novel building materials do not suit environment and culture.

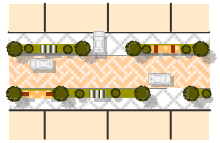




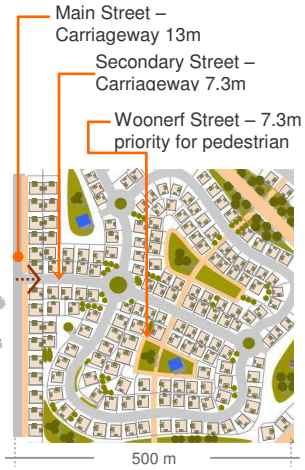
Design Guidance

- The neighbourhood will have a hierarchal network of streets that allow direct access to their houses – enhancing the identity.



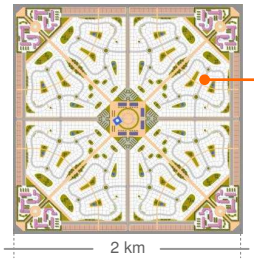


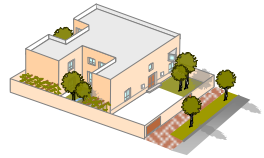
Woonerf Street



- By employing modern methods of construction, spaces within the houses can be designed to accommodate modern furniture.

- At both levels – neighbourhood and house – organic urban fabric, local architectural styles and building materials, mud and stone, will suit environment and culture.



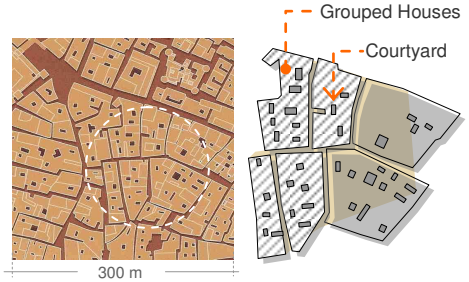


Limited openings towards street – related to male guest reception and dinning

Identity: 2

Current Situation

- At both levels – neighbourhood and house – features such as an organic urban fabric, inward orientation and natural materials reflect residents' cultural norms.



All spaces are oriented towards the courtyard.

- This type meets residents' aspirations for personal identity.

Design Guidance

- At both levels – neighbourhood and house – pedestrian-oriented urban fabric, narrow and winding streets, inward orientation and natural materials will meet cultural aspirations.

The house is oriented inward towards the courtyards.

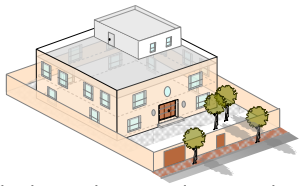
- By integrating modern construction techniques and natural building materials, with traditional styles and forms, residents can create houses that that reflect 21st century lifestyles and respect traditional identity.

Symbolism

Current Situation

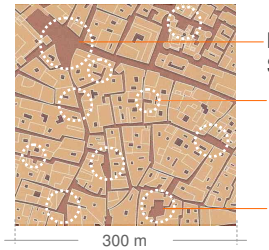
- Residents are not engaged with their surroundings, which in turn cannot offer them symbolism.

The neighbourhood has no specific places for residents to engage with. It is composed of plots and wide streets.

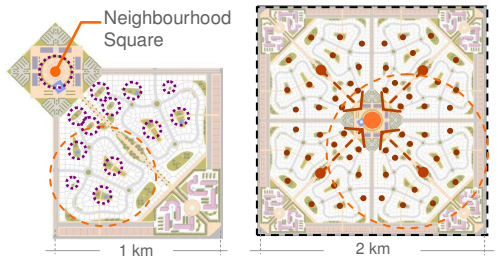


The house has no private outdoor space for the family to engage with.

- The setting contributes to meaning for residents – open spaces within the neighbourhood and the courtyard within the house offer opportunities for social and family interaction, which deliver symbolism.

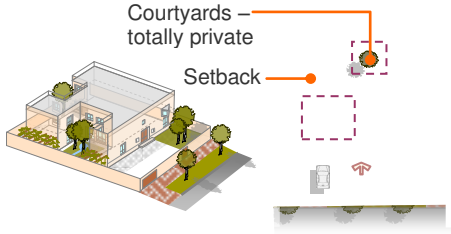


Design Guidance



Hierarchy of open spaces are distributed over the entire neighbourhood

- In order to establish opportunities for social and family interaction at both levels – neighbourhood and house – a hierarchy of meaningful open spaces has been emphasised as follows: neighbourhood square, pedestrian street, *baraha*, cul-de-sac and courtyards will contribute to the symbolism of place.

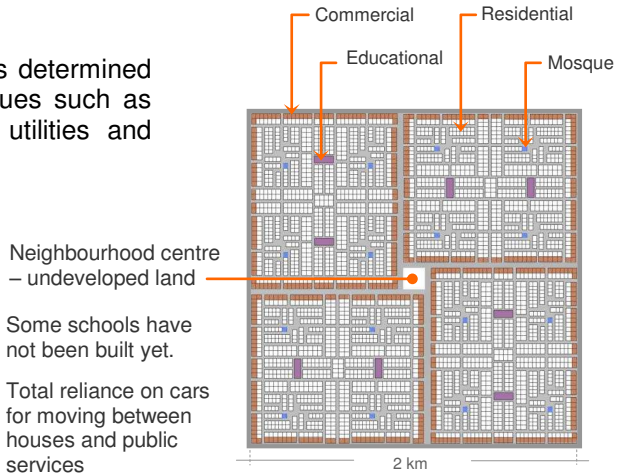


The courtyard concept has been adopted in a way that fits with the setbacks of the house.

Location

Current Situation

- House location is determined by functional issues such as services, public utilities and facilities.

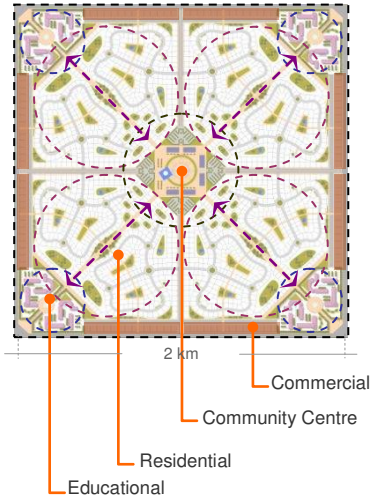


- Locations have shared meaning for the community.

- Topographical and environmental characteristics do not vary.

Design Guidance

- Equality in the distribution of services, public utilities and facilities will provide opportunities for all neighbourhoods.
- Equality of provision will also enhance opportunities for shared meaning in all locations.



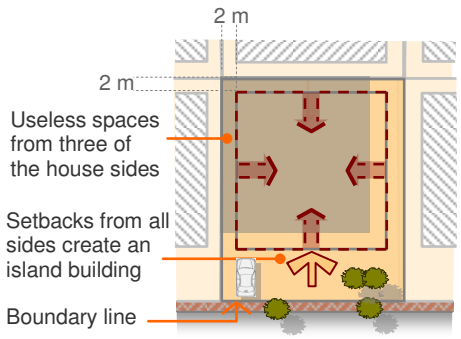
- As all neighbourhoods have the same topographical and environmental characteristics, equality of provision will avoid certain locations seeming to be favoured.

The public services and facilities are located in the centre and corners, and can be reached by car as well as on foot.

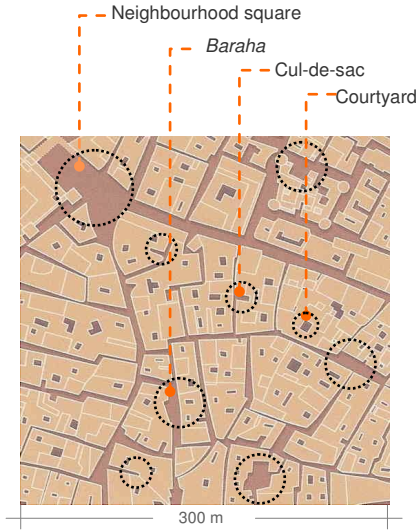
Environment

Current Situation

- The setting of the house represents separation from the external environment through artificial interior climate control, communication technologies and travel by car.

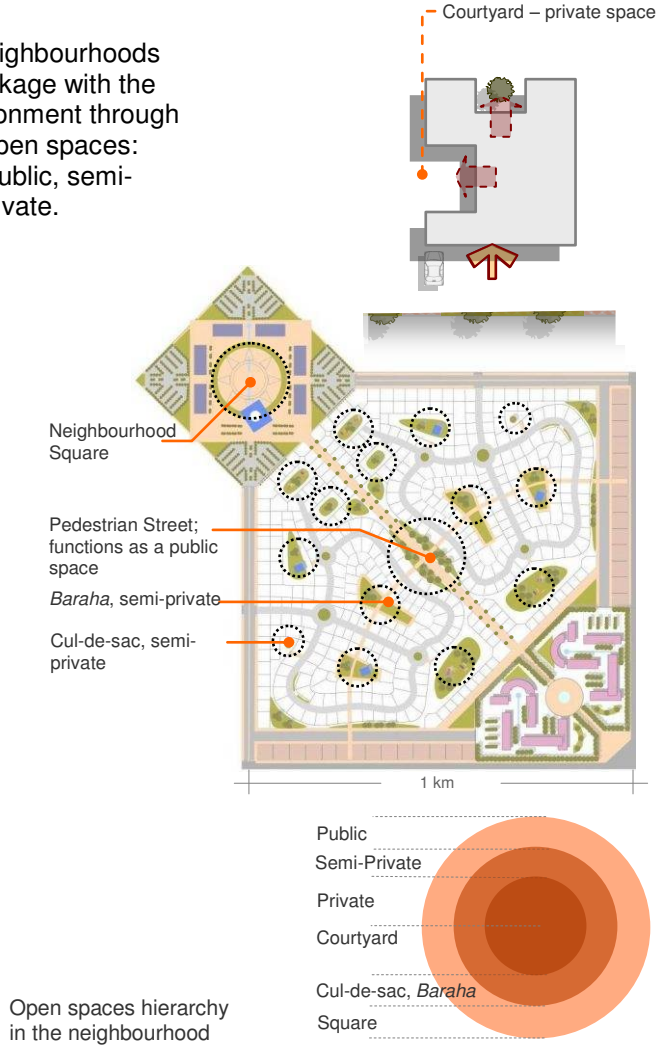


- The setting of the house represents linkage with the external environment through hierarchy of open spaces: public, semi-public, semi-private and private.



Design Guidance

- Patterns of neighbourhoods will provide linkage with the external environment through hierarchy of open spaces: public, semi-public, semi-private and private.

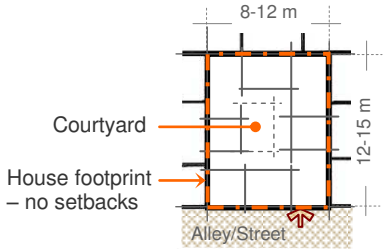


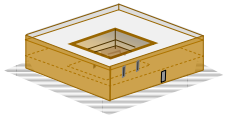
Open spaces hierarchy in the neighbourhood

Types: 1

Current Situation

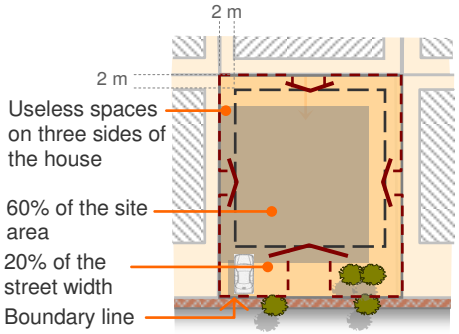
- Constrained footprint and limited number of rooms.





The house is composed of five rooms, one guest reception, kitchen, store and two toilets. There is no space for family cars.

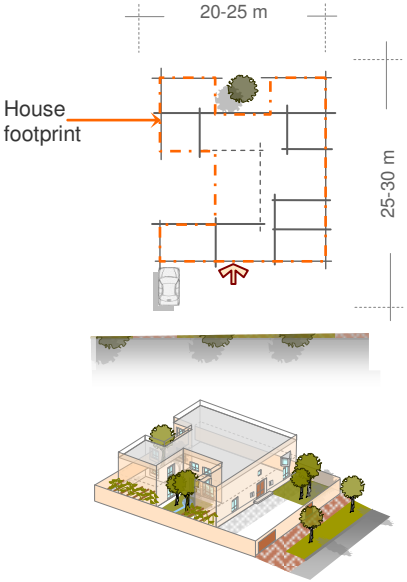
- Setbacks required on all four sides of the house – minimum of 2 metres or 20% of street width.
- Footprint restricted to 60% of the site area.



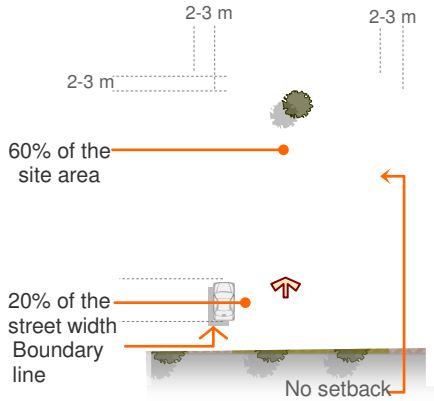
Setbacks from all sides creating an island building

Design Guidance

- Despite footprints being constrained by the setbacks and plot coverage regulations. More rooms and larger spaces can be provided.



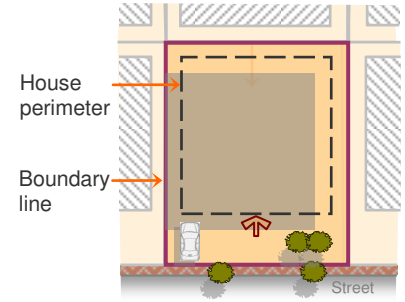
- The omission of one of the setbacks and the addition of two courtyards will enable more effective use of the plots
- The restriction of footprints occupying 60% of plot areas will be maintained in accordance with current building regulations.

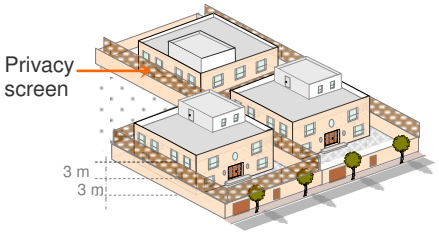


Types: 2

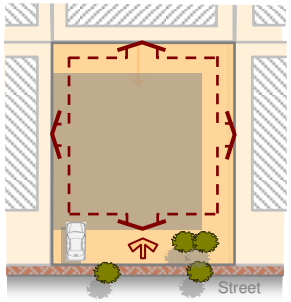
Current Situation

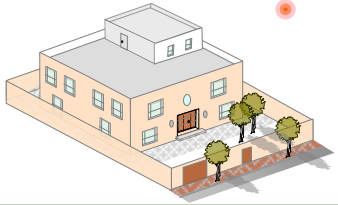
- Layout necessitates windows to be located on perimeter of the house, which adversely affects privacy of neighbours' houses, resulting in erection of screens to assure family privacy.





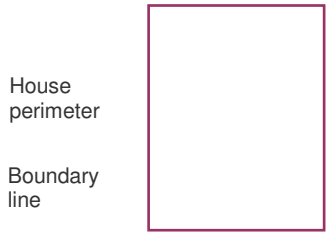
- Layout exposes all external walls and windows to the sun.

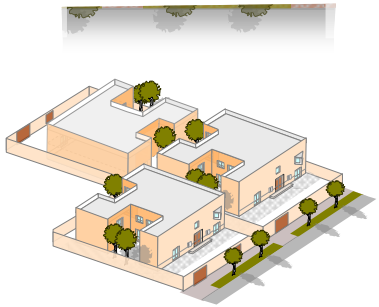




Design Guidance

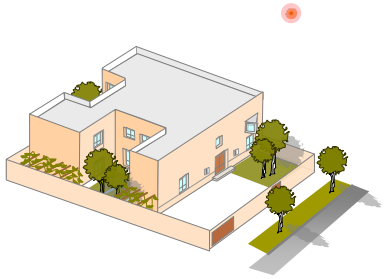
- The courtyards will enable windows to be located there, rather than on the perimeter, thus protecting family privacy.





No openings toward neighbours

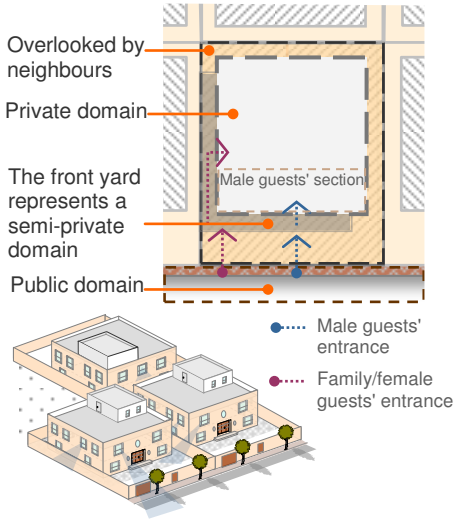
- The courtyard layout creates shaded walls and prevents windows from being exposed to the sun.



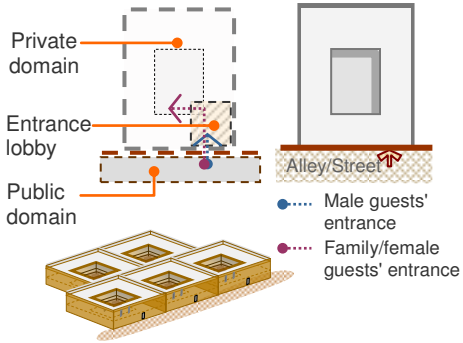
Thresholds

Current Situation

- Does not designate a private domain for the household – compromised by male guests and overlooking by neighbours.



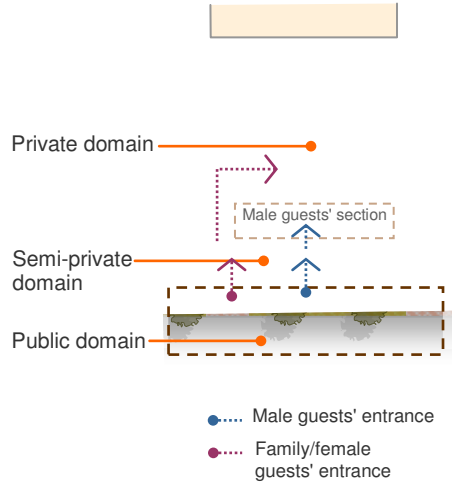
- Operates as clear division between public and private domains.



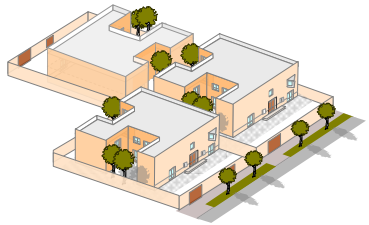
- Operates as a transition between the public domain and the front yard as a semi-private domain (see top of this page).

Design Guidance

- Thresholds will operate as transition points between the public domain and the front yard which constitutes as a semi-private domain. They will also enable families and female guests to use private entrances.



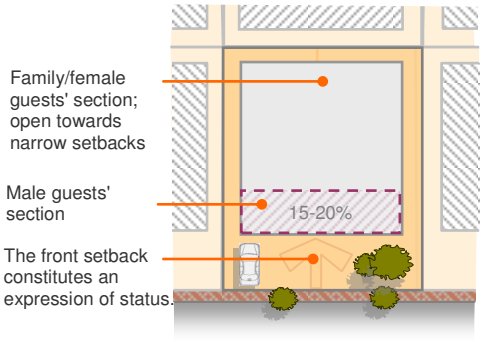
- Thresholds will enable transition from semi-private to private domains.



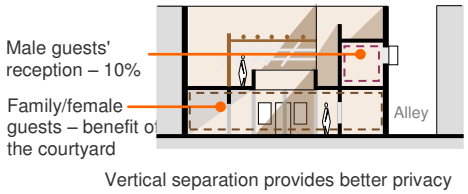
Internal Arrangement: 1

Current Situation

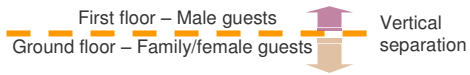
- Prioritising male guests is an expression of status.
- The family/female guests are given second priority to male guests.



- The house is divided into two sections – male guests and family/female guests.

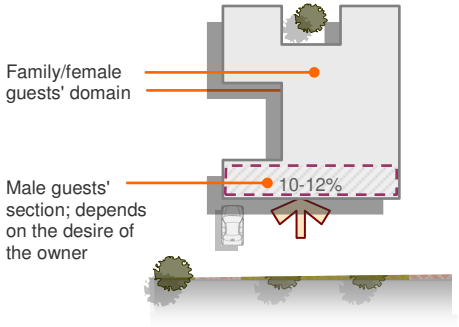


- Areas for male guests and the family/female guests are separated vertically.

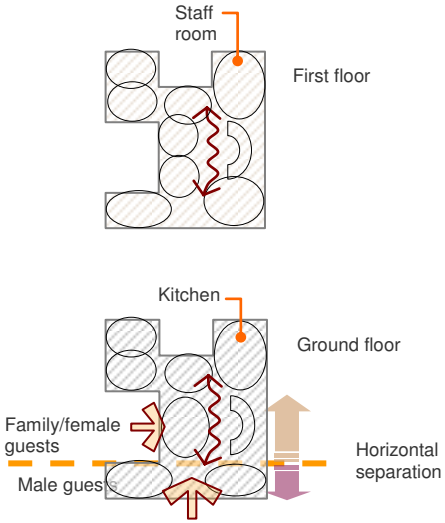


Design Guidance

- Provision for male guests will still form a substantial part of household status, and will be located in the front part of houses, adjacent to front yard. Nevertheless, the family/female guest area will have priority as it will be located at the focal point of the house – adjacent to the private courtyards



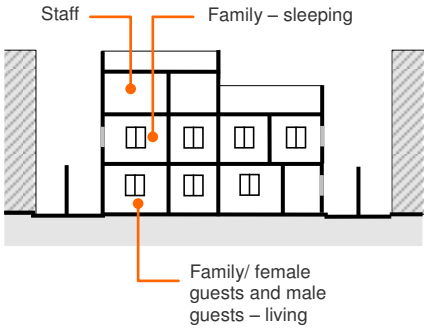
- House will be divided into three sections – male guests, family/female guests, and staff.

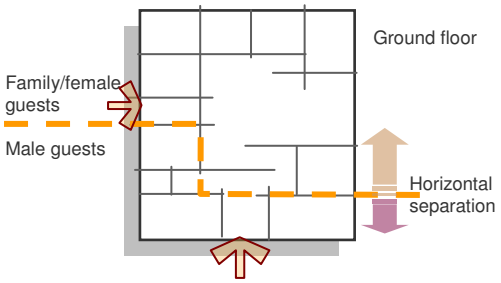


Internal Arrangement: 2

Current Situation

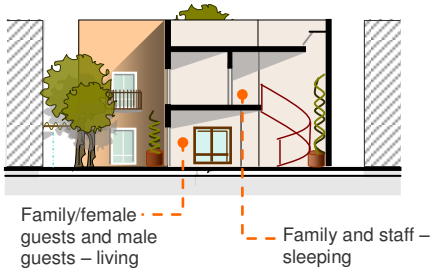
- The house is divided into three sections – male guests, family/female guests, and staff.
- Areas for male guests and family/female guests are separated horizontally.





Design Guidance

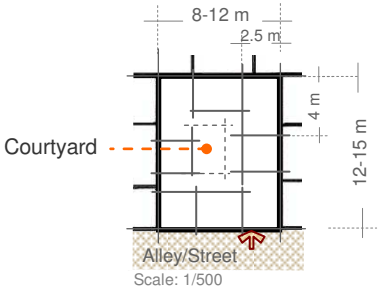
- Staff will be accommodated at first floor level, to optimise the ground floor for male guests, family and female guests.



Nature of Spaces: 1

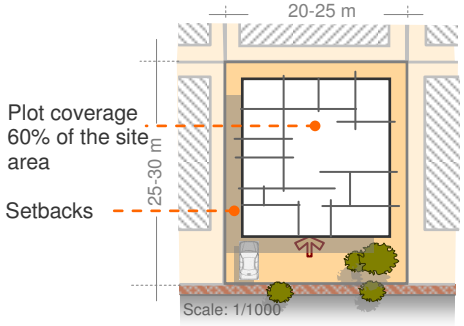
Current Situation

- The size of rooms is very limited – rarely exceeding 2.5 metres wide, and inadequate to accommodate modern furniture.



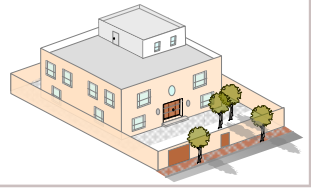
Male guest reception

- Large house size exceeds residents' needs.
- Duplication of spaces.
- Furniture in living space does not reflect residents' culture.
- Uncomfortable margins in external spaces – generated by setbacks.



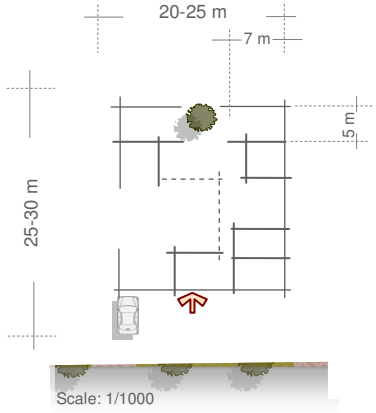
Two receptions for male guests, two dinning rooms, 5-7 bedrooms, 2-3 staircases, and 7–9 bathrooms and toilets; a bathroom for each bedroom

Family living

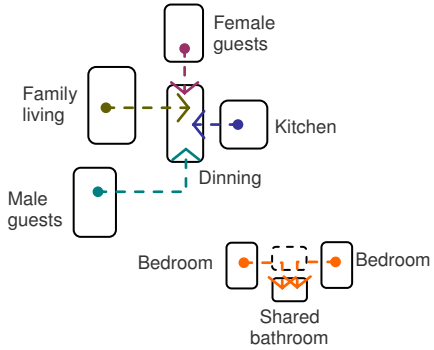


Design Guidance

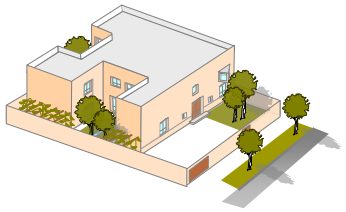
- The layout and construction will enable the future use of demountable partitions to enable the flexibility of changing the sizes of rooms, in accordance with the future needs of the households.



- The precise location of spaces such as the dining room will enable them to serve male guests, female guests and the family at different times. This will reduce the amount of space that might otherwise be needed for dining and other functions, and could reduce the overall size of houses.



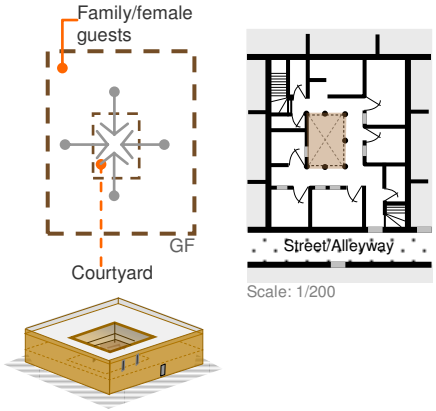
- Interior design of spaces should allow residents to express their culture.
- Setbacks will be integrated with courtyards to generate comfortable and usable external spaces.



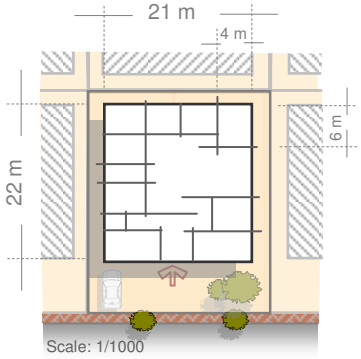
Nature of Spaces: 2

Current Situation

- Family/female guests are given the primary location around the courtyard.
- Courtyard serves as a private open space and a place for social celebrations.



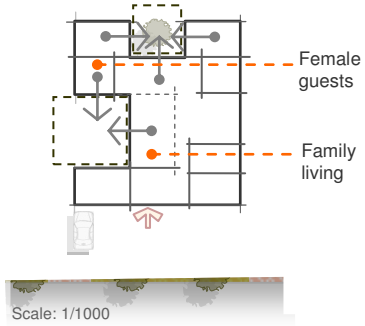
- Large house size and number of rooms meet residents' desire for status.



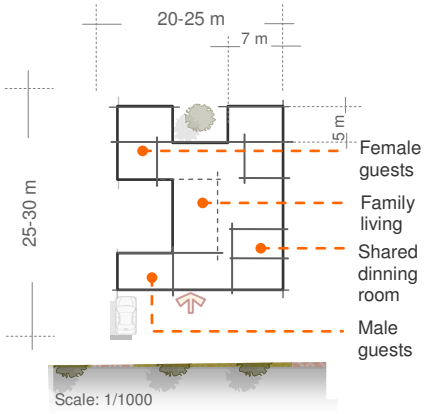
Two receptions for male guests, two dining rooms, 5–7 bedrooms, 2–3 staircases, and 7–9 bathrooms and toilets; a bathroom for each bedroom.

Design Guidance

- Family/female guests will be located around two courtyards.
- The courtyards will be entirely private open spaces and places for family activities and celebrations.



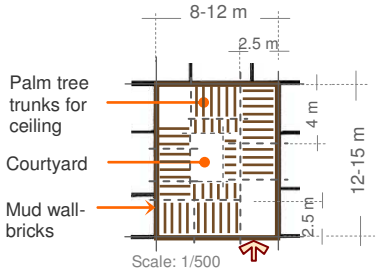
- Design of spaces – size and number of rooms – will follow the lifestyle and culture of their occupants without overemphasising status.



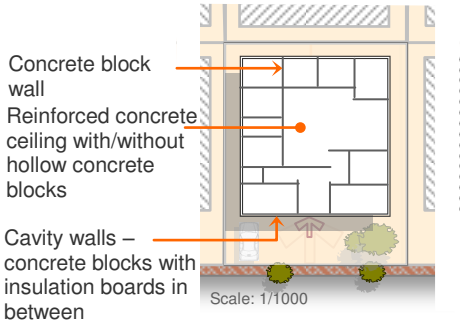
Materials and Construction: 1

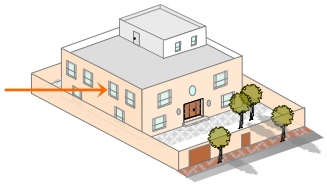
Current Situation

- Structural system limits floor spans to typically 2.5 metres.
- Short span roof structure limits the overall size of the house.
- Traditional methods of restrict speed of construction.



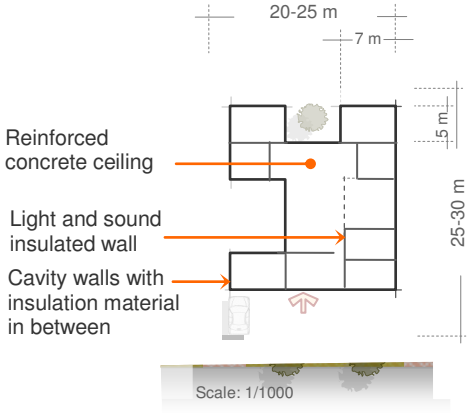
- Materials are imported, machine-made, expensive and require sophisticated assembly techniques.



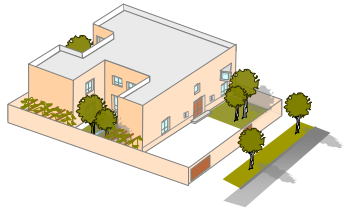


Design Guidance

- By using modern construction methods, it will be possible to enlarge the size of rooms, to meet 21st century lifestyles.



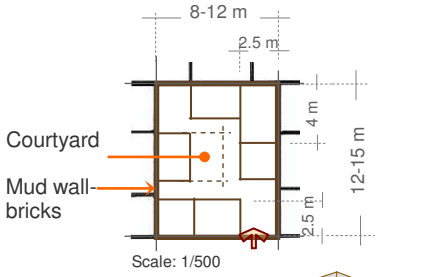
- Using indigenous building materials such as mud and stone are inexpensive and easy to construct. Nevertheless, modern building materials such as glass and aluminium can be readily incorporated to generate a contemporary aesthetic.

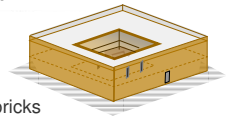


Materials and Construction: 2

Current Situation

- Materials are locally available, natural, inexpensive and easy to use.
- Mud walls function as thermal time-lag, storing heat during hot days and slowly releasing it during cool nights.





Mud bricks

Palm tree trunks and leaves for ceiling

- Concrete block walls are durable and resistant to rain.
- New building materials and construction techniques are suitable to the new architectural design concepts and contemporary furniture.
- Unlimited supply of materials fits with residents' desire for status through external appearance of house.

Concrete blocks

Contemporary furniture

External appearance

Design Guidance

- To maintain the economic use and thermal properties of traditional mud bricks, while increasing their longevity and structural capabilities – 5% cement can be added to produce compressed earth blocks.

Mud blocks - California

Earth blocks; several sizes and forms fit with different uses. Auroville Earth Institute (AVEI)

(Source: www.earth-auroville.com)

- Experience of building in other hot and dry climates throughout the world, suggests that combinations of traditional and modern materials and construction, can moderate climatic conditions and meet the 21st century aspirations of residents.

(Source: www.earth-auroville.com)

A house in Colombia

Vikas apartments – India

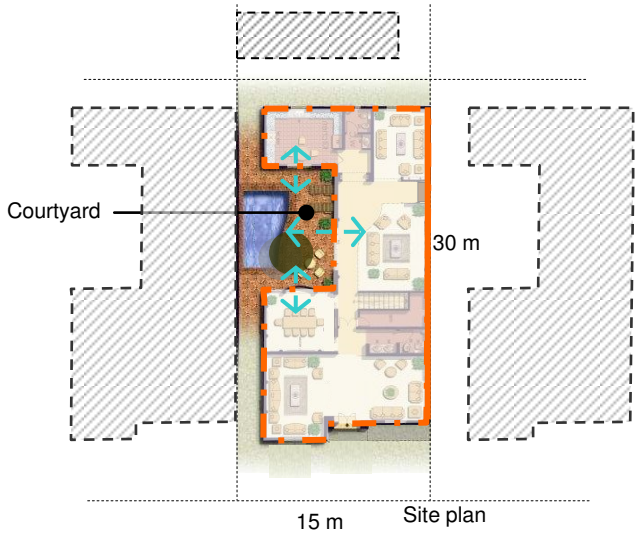
A house in Mexico

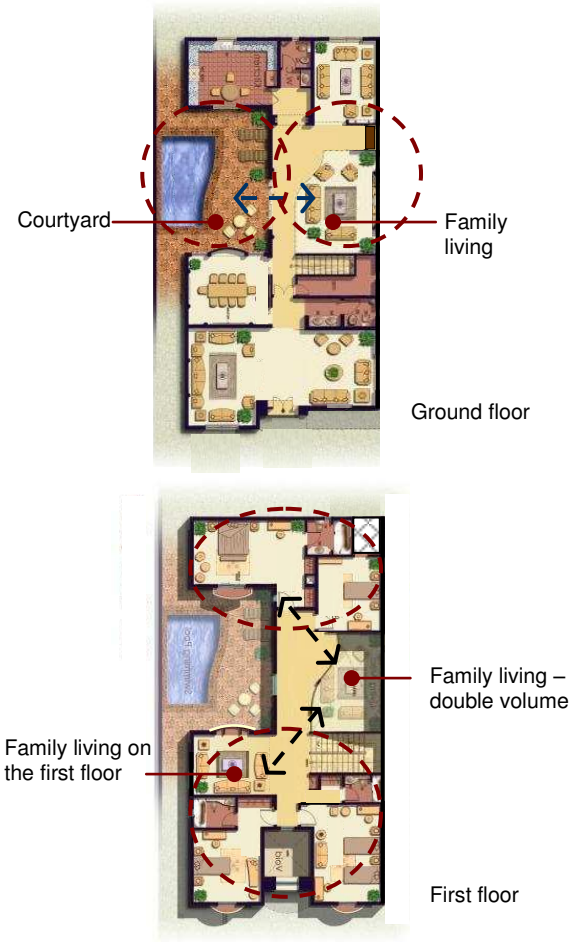
A mosque in Riyadh

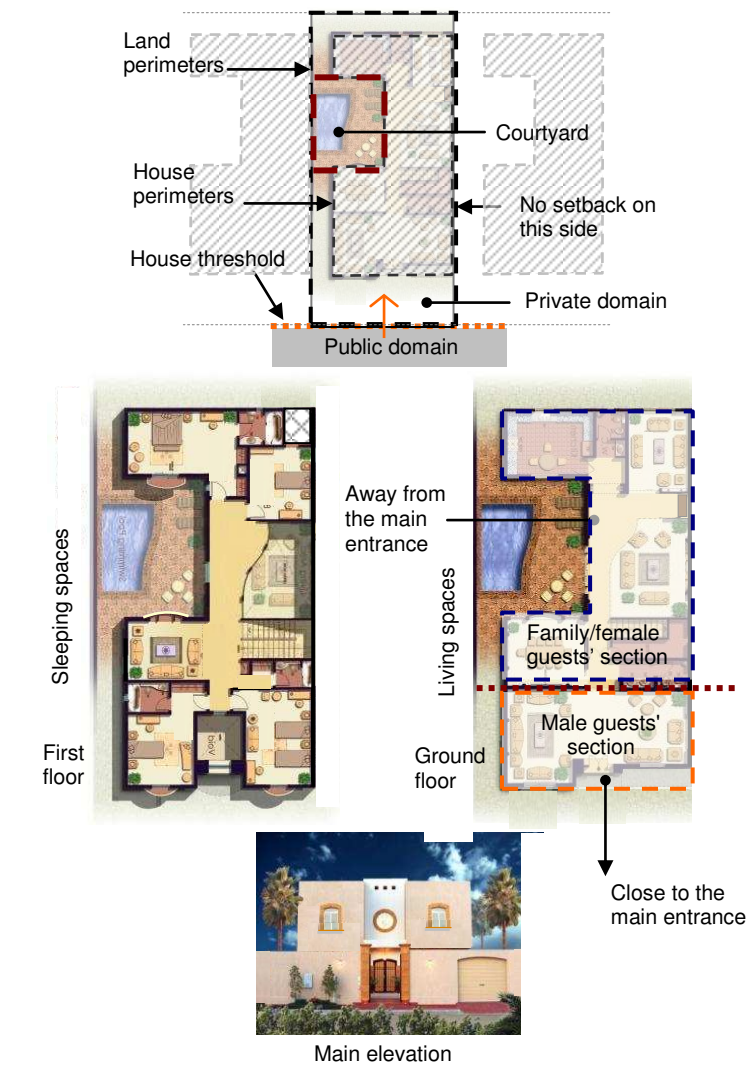
Interior finishing and decorations

7.10 The Evaluation of the Design Guide

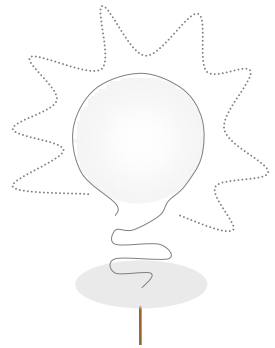
This part of the study focuses on portraying an evaluation of the design guide. It aims to test the 15 criteria. To be able to conduct this test, a villa house of detached type – 450 m^2 – has been designed with a courtyard concept. The following table presents the house in two plans – ground and first floors – and the main elevation.

Design Guidance Criteria	House Design Evaluation	House Design Illustrations
Climatic comfort	House spaces are oriented towards a central courtyard. Benefits from natural lighting and ventilation.	
Safety and Security	Safety and security are managed via minimising and gathering outdoor openings within the courtyard space.	
Privacy	Most of the windows are directed toward a private courtyard, and no windows allowed to be directed toward neighbour's courtyard.	
Status	Achieved by using Riyadh Stone in the form of a ring surrounding openings and main entrance for decoration.	
External appearance	Enhancing the main elevation by using the technique of different levels; solid and void; different materials, textures and colours.	

Design Guidance Criteria	House Design Evaluation	House Design Illustrations
Attachment	Family living space is located in a central place – overlooking the courtyard – which helps in connecting house spaces together and gathering family members.	
Identity	Expressing the identity through the use of the idea of the courtyard and the reduction of outward-directed openings, by which it reflects to what extent the house connects to the place.	
Symbolism	Family living and courtyard spaces function as appropriate spaces for conducting various family activities and creating memories. Family living space is opened to the first floor, and connected to another family space. This in turn helps in enhancing its role as a prime space.	
Location	House location has no significant features that might affect the design except the orientation of the courtyard, which is directed not to the west to avoid overheating.	
Environment	Using the courtyard concept helps in connecting the internal environment of the house with the external one.	

Design Guidance Criteria	House Design Evaluation	House Design Illustrations
Types	Even with no setback on one side of the house, this is still considered a detached villa home, which is the preferable type.	
Threshold	House threshold clearly separates between public and private domains.	
Internal arrangement	Horizontally, it concentrates on the division between male guests section and family/female guests section. Male guests' section is placed close to the main entrance, while family /female guests' section is located away from the main entrance.	
Nature of spaces	Living spaces – male guests' reception, family living, and female guests' reception – are located on the ground floor. Sleeping spaces are located on the first floor.	
Materials and construction	A combination of natural materials (mud blocks) are used for walls, and man-made materials (reinforced cement) for ceilings. Riyadh Stone, as a local and natural material, is used for decorating the elevations.	

Discussion, Conclusion and Contribution to Knowledge



8. Discussion, Conclusion and Contribution to Knowledge

8.1 Discussion and Conclusion

The aim set out at the beginning of this thesis was to highlight the need for a specific contemporary home style where both the treatment of place and house design meet all the needs of Saudi households. Therefore, the output of this research, as presented in Chapter 7, is embodied in the *Design Guide*; some guidance for house design that could satisfy 21st century aspirations, yet still respect Islamic culture and traditional values.

To achieve the aim of this thesis and make a contribution to knowledge, the specific objectives were: firstly, to investigate the fundamental principles of home (Chapter 2). This objective contributed to creating a clear understanding about the main notion of home, and how to differentiate between home and house. This chapter revealed that house is not a home unless three principles are integrated and very well connected to each other: human needs, place, and house. Home is more than just a physical structure; it comprises social relations between individuals and groups, interrelated qualities of people and environment, and emotional relationships between people and the living place.

Human needs, as well as place characteristics, are very important factors – among others – in shaping the form of the home. This part of the study revealed that house design as a process is affected by the needs of its occupants as well as the place where the house is located. Fifteen related issues to home principles, i.e. climatic comfort, safety, security, privacy, status, external appearance, attachment, identity, symbolism, location, environment, house types, thresholds, internal arrangement, and materials and construction were identified for future investigation. Furthermore, this part revealed that an individual house design is an integral part of a cluster of houses, and the whole neighbourhood as a group of clusters. This hierarchy has a significant influence on the final achievement of the real concept of home.

The second objective was to understand the influence of Islamic culture upon the concept of home. The current state of knowledge revealed that the Islamic culture has a great influence in forming the nature of the house in particular and the whole built environment in general. It contributes to determining the relations between the inhabitants, strengthens the deployment of equality, deepens the meanings of love

and cooperation, and enhances good neighbourly relations. This, in turn, has a significant impact in providing for privacy needs, and propagation of safety and security among the residents. The impact of this culture has emerged in the division of the house into two domains, semi-private and private, which are in line with the need for privacy as a religious requirement. It also calls for respect for the environment and not to damage it in any way or for any reason.

The third objective was to demonstrate the nature of both styles of house: courtyard and villa. The current state of knowledge revealed that, compared with contemporary neighbourhoods and the villa-house style, the traditional residential neighbourhoods and the courtyard-house style are more appropriate for Saudi households on the one hand, and the local environment of the central province on the other, where, at the same time, it expresses Islamic culture. It is characterised by a compact arrangement of houses, a hierarchal network of open spaces, narrow winding alleyways that are pedestrian-oriented, and inward-oriented courtyard houses. It emphasises the need for privacy, security and climatic comfort, and enhances the sense of attachment and expresses the identity of its inhabitants. By contrast, in the contemporary residential neighbourhood of the villa house, the urban pattern is car-oriented and isolates people in detached dwellings, with a lack of socio-cultural domains, safety and security. It encourages negative social norms such as lack of respect for neighbours' privacy, and reduces the sense of attachment and identity, as it fosters individualism.

This part of the study revealed that the courtyard house and the traditional neighbourhood has succeeded in meeting inhabitants' needs, while the surrounding environment is well-considered and respected. However, the current situation of traditional building materials and construction methods has not allowed the courtyard-house style to be able to meet the 21st century aspirations of Saudi residents. As a result, people live in villa houses and tend to modify them in line with their traditions and lifestyles. However, these modifications can adversely affect the enjoyment of living there due to the enforced constraints.

As for the fourth objective, measuring the extent of satisfaction of the residents, different methods – a questionnaire survey, interviews and architecture drawing analysis were employed. Although the questionnaires had been tested before they were utilised, the analysis of the results showed that there were confused answers; e.g. people who expressed their satisfaction about privacy in villa houses did not illustrate the main reasons for it. This led the researcher to conduct additional interviews, which were not planned in advance. The final outcome of the data analysis revealed that neither house type totally meets the needs of

residents. The courtyard house fulfils the needs of privacy and protection from the climate, but is too small in overall terms and in each space. It also has no response to 21st century needs, such as the use of vehicles. The villa house is very large by comparison and meets all accommodation needs. However, it is inadequate in terms of privacy and views out. It also lacks natural light and ventilation, with a huge reliance on electrical power for light and air-conditioning. Moreover, there is no provision for comfortable external space.

The final objective was to identify features that should be included in the design and layout of houses to meet residents' needs. The design guide constitutes the outcome of this phase. It relies on the concept of integration between tradition and modernity. This was achieved by recasting urban and architectural features of both courtyard and villa houses, as follows: firstly, promoting a hierarchy of spatial linkage between the house and cluster of houses grouped around a semi-private space(s), and between the cluster and the neighbourhood – a number of clusters grouped around a public square. This, in turn, would help in encouraging residents to walk, interact and undertake social activities; i.e. neighbours would be able to meet each other and build trusting relationships, which would enable residents to easily notice strangers and thus enhance feelings of safety and security.

Secondly, the development of a network of pedestrian links between homes and other elements in the neighbourhood, such as the neighbourhood centre, mosques, schools, public and semi-public squares. This idea would be adopted by using winding streets, reducing the width of the roadway and increasing the width of the pavements, taking into account street furniture such as lighting, benches and landscaping. Thirdly, confining entrances to the neighbourhood to the minimum, which at the same time would not permit people to cross straight over to the other end of the neighbourhood. This would help to prevent outsiders from using roads in the neighbourhood only for the purpose of transit, which might otherwise pose an inconvenience to the lives of the residents and prevent them from walking within their neighbourhood.

Fourthly, relocating commercial areas such as shops, cafes, restaurants and other services, which attract people from outside the neighbourhood, to be situated along the edge of the neighbourhood. This would keep any external extra traffic away from pedestrian movement.

Architecturally, the idea of the courtyard in a traditional house has been adopted. This enables spaces to be orientated around a courtyard or courtyards. For the application of this idea, one side of the house must be prevented from positioning any openings facing the house next door. Therefore, it has been proposed to eliminate one

setback – preferably towards the west, where the sun's rays are more severe – and so it becomes possible to take advantage of that space to add two courtyards, one of them on the other side of the house – facing the solid wall of the house next door – and the other at the back of the house.

As the architectural style, building materials and construction techniques can be selected to maintain the local identity, it is assumed that the use of alien architectural patterns should not be allowed. Instead, local architectural styles and features should be relied on, using indigenous building materials with the use of modern technologies in construction. By combining modern technology with traditional styles and forms, opportunities can be created for the new architecture to coexist with the old.

The final product of this research resulted in design guidance – a *Design Guide* for the residential environment (the house and the neighbourhood) derived from the experiences of both courtyard and villa houses. It classifies fifteen issues relevant to the three principles of home: human needs, place and house.

The *Design Guide* is intended for use by those who are involved in residential development: homeowners, design practitioners, and authorities encouraging and regulating development. It aims to facilitate the design process of the residential environment in order to achieve the needs of the occupants and, at the same time, be compatible with the environment and local traditions.

To evaluate this guidance and to be sure how important, effective and applicable it could be in practice, a group of stakeholders from the Ministry of Housing, Riyadh Municipality and the Saudi Council of Engineers and Architects, representing the house design profession, and academics, representing housing, architecture urban and regional planning, were interviewed to gather their observations. In summary, everyone expressed their admiration for this idea, especially as such guidance is currently completely absent. The guidance would reconcile the needs of the three parties involved in the process of residential development: the Municipality of Riyadh, landlords and house designers. It would also contribute effectively to the reduction of the number of building violations, which are usually committed by landlords because of their dissatisfaction with the existing technical requirements.

8.2 Contribution to Knowledge

Analysis of the current state of knowledge in terms of the ideas of house and home, and the differences between them, revealed that there are deficiencies in realising the concept of home and what its fundamental principles are. As a result,

previous studies – only a few in total – have focused their concerns on a limited number of the villa house's defects, which relate to privacy, security, and exaggerated decoration in the various spaces and multiple rooms. There are shortcomings in these studies about the drawbacks relating to the villa house as a home. Thus, there seems to be a gap in the current knowledge about clarifying the holistic concept of home and determine what aspects are involved under each of the three principles.

Another contribution is reflected in the highlighting of the prominent role of Islamic culture in the formation of the house in Saudi Arabia. First, there is an emphasis on respect for the neighbours and the avoidance of nuisance in any way, which includes respecting their privacy. Secondly, it encourages people to be hospitable to neighbours and guests, which may include providing food and drink, and allowing male and female guests to sleep over for a period not exceeding three days. Finally, Islamic culture emphasises the necessity of providing visual and spatial separation between the male guests and the family. This role is supposed to be reflected clearly in the design of the house, while respecting the privacy of neighbours.

The current literature emphasises that the courtyard house is able to achieve the needs of the occupants, including climate comfort, safety, security and privacy. Yet, the data collection stage and the subsequent analysis of the results demonstrated that, in the light of current negative changes in weather conditions, the courtyard house requires some additions and/or alterations so that it becomes able to provide the climatic comfort required by those who dwell in it.

A further contribution to knowledge emerged in the methodology used to collect data – survey questionnaires and interviews – to analyse the contradictions in respondents' answers, through the use of the "style of writing" questions and arranging them in a way that enabled the link to be made between inhabitants' satisfaction and the adjustments made to their homes to achieve this satisfaction. It was instrumental to uncovering the reasons why some of the occupants felt satisfied, even without any alterations to their homes.

8.3 Future Work

This research is limited to the detached type of villa house, within the central province city of Riyadh. Other provinces in Saudi Arabia have variations of this type of house, and different environmental conditions. For example, the eastern province has a humid climate that may require different design guidance. This, in turn, points towards the necessity for further research in order to investigate

the need to develop specific design guidance for each province separately.

Modern technology, especially social media and computer games, has become a key requirement for every individual of family members, which may influence the way they communicate with each other. This could have an effect on the design of the house, the nature and arrangement of spaces. The sense of attachment between the household and the house as home, as well as between the household and the neighbourhood, could also be perceived in a different way. Further detailed theoretical and empirical research may continue to examine how this phenomenon can alter residents' satisfaction and quality of life.

Culturally, Saudi society has recently become more informed about different cultures around the world, for different purposes such as tourism and study. Therefore, these influences may impact on the nature of house and home, as well as the pattern of daily life. All these considerations could expand the study in future.

Appendices

Appendix A: Questionnaire Form

Appendix B: Interview Schedule, Courtyard House – Satisfaction with alterations
Interview Schedule, Courtyard House – Satisfaction without alterations

Appendix C: Interview Schedule, Villa House – Satisfaction with alterations
Interview Schedule, Villa House – Satisfaction without alterations

Appendix D: Place Interview Schedule – Courtyard House
Place Interview Schedule – Villa House

Appendix A
Questionnaire Form

Survey Invitation

Dear Resident

You are being invited to participate in a research study about house design in the central province. This study being conducted by Majid Ibrahim, from Northumbria University in the UK. The study is being conducted as part of a project. The information you provide will give an indication about residents' satisfaction and dissatisfaction with their houses. The questionnaire will take about 15 minutes to complete.

This survey is anonymous, no one will be able to identify you or your answers, and no one will know whether or not you participated in the study. Should the data be published, no individual information will be disclosed. Your participation in this study is voluntary. By completing this survey, you will have agreed to participate.

If you have any questions about the study, please contact Majid Ibrahim at ud.majid@gmail.com. The University Ethics Committees have reviewed my request to conduct this project. If you have any concerns about your rights in this study, please contact Professor Bob Giddings – the principal supervisor of this study – at bob.giddings@northumbria.ac.uk.

Questionnaire

Q. 001

District Name: _____

Courtyard ☐ Villa ☐

Introduction

This questionnaire is divided into five main sections to cover the five key issues relating to your needs in the house as follows:

- Climate
- Safety & Security
- Privacy
- Status
- Aesthetics

Note: Questions 1–8 will be displayed as a short statement, just tick one option to indicate whether you agree or disagree.

Section A – Satisfaction of protection against climate conditions

Q.1 Your house is comfortable in different climate conditions.

	Strongly agree	Agree	Neither	Disagree	Strongly disagree
Heat					
Cold					
Rain					
Sand Storms					

Q.2 The outdoor spaces at your house are frequently used at any time.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Section B – Satisfaction of safety and security

Q.3 You always feel safe in your house.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Q.4 You are comfortable about security when you are not there.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Section C – Satisfaction of privacy

Q.5 Your family privacy is maintained inside your house from neighbours.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Q.6 Your family privacy is maintained in the outdoor spaces of your house.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Section D –
Status issue

Q.7 You believe that your house status is very important to you.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Section E –
Aesthetic issue *(the external appearance)*

Q.8 You believe that the external appearance of your house is very important to you.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

---------- *End of the short statement questions* ----------

Q.9 Have you made any alterations or additions to your house in order to:

Improve comfort against the climate ☐
Achieve family safety ☐
Achieve security ☐
Provide privacy for your family from neighbours ☐

If you did, please identify which of the following means were used (tick if appropriate)

	Climate conditions	Safety	Security	Privacy
Roof the yard				
Raising the fence				
Alarm system				
Metal bars over windows				
Reduce the size of windows partially or blocked them up				

Q.10 Finally, from 1 to 6, please rank the following as the most important in your house, where 1 is high and 6 is low:

[ ] External appearance
[ ] Safety
[ ] Security
[ ] Privacy
[ ] Status
[ ] Comfort to climate conditions

Thank you for your cooperation….

Appendix B
Interview Schedule, Courtyard House

Invitation for an interview

Dear Resident

You are being invited, as a representative of your family members, to participate in a research study about house design in the central province. Thank you for taking part in the previous survey questionnaires which was conducted in December 2012. This study being conducted, as part of a PhD project, by Majid Ibrahim from Northumbria University in the UK. The information you provide will give an indication about residents' satisfaction and dissatisfaction with their houses. The interview will be conducted between the 14th and 22nd of August 2013, and it will take about 30 minutes.

This interview is anonymous, no one will be able to identify you or your answers, and no one will know whether or not you participated in the study. Should the data be published, no individual information will be disclosed. Your participation in this study is voluntary. For accuracy purpose, this interview will be recorded. By completing this interview, you will have agreed to participate.

If you have any questions about the study, please contact Majid Ibrahim at ud.majid@gmail.com. The University Ethics Committees have reviewed my request to conduct this project. If you have any concerns about your rights in this study, please contact Professor Bob Giddings – the principal supervisor of this study – at bob.giddings@northumbria.ac.uk.

Note: this interview constitutes the second phase of the main study after the questionnaires survey conducted with you in December 2012. Your questionnaire's answers of the previous questionnaires are attached, just in case if you need to remember it.

Majid Ibrahim

Interview Form
Courtyard House/Satisfied with alterations

Study Title **Design of the Contemporary Saudi-Arabian House**

Date ……

Time ……

District ……

Interviewee (Optional) ……

Note: the interview will be conducted with the head of the household as a representative of family members.

A. With regard to climatic comfort

1. Is your family satisfaction about climatic comfort inside the house because of the alterations you made? If yes, please give some details?

   If no, what are the significant reasons?

2. Is your family satisfaction about climatic comfort within the outdoor spaces because of the alterations you made? If yes, please give some details?

   If no, what are the significant reasons?

Yes	No	
Adding air-conditioning units	Al-Ibrahim 1990	
Roofing the yard	Al-Ibrahim 1990	

Yes	No	
Adding air-conditioning units	Al-Ibrahim 1990	
Roofing the yard	Al-Ibrahim 1990	

B. Satisfaction with house security

Is your family satisfaction about house security caused by the alterations you made?

If yes, can you give some details?

If no, what are the significant factors?

Yes	No	
Roofing the yard	Al-Ibrahim 1990	
Using steel doors and grilled iron windows	Al-Nowaiser 2001	
Reduce the size of windows partially or blocked them	Al-Nowaiser 2006	
Inward oriented concept (courtyard concept)	Bahammam 1996	
A limited number of doors and windows	Al-Hathloul 1981	
Neighbourhood surveillance by residents	Stollard 1991	
Spatial fabric (narrow and winding alleys)	Mubarak 2007	

C. Satisfaction about external appearance

As the external appearance of your house is important for your family, is that already satisfied in your house?

If not satisfied, what are the factors most affected?

Yes	No	
Limited alternatives of building materials	Eben-Saleh 2001	
Feeble/poor building materials	Mubarak 2004	

D. General Information about Household

1. Why did you choose to live in a courtyard house – not a villa house?

2. If you could afford a villa house, would you remain in your current house or move?

Sense of attachment	Al-Nowaiser 2001	
More private	Al-Hemaidi 2001	
Safe and secured	Eben-Saleh 2001	
Low-cost dwelling	Mubarak 2004	
I will	I won't	

Before we end this interview, would you like to raise any points that you think still need to be covered and have not been covered so far?

I would like to thank you for accepting to participate and provide such valuable information….

Interview Form
Courtyard House/Satisfied without alterations

Study Title **Design of the Contemporary Saudi-Arabian House**

Date ……

Time ……

District ……

Interviewee (Optional) ……

Note: the interview will be conducted with the head of the household as a representative of family members.

A. With regard to climatic comfort

2. As your family is satisfied about climatic comfort inside the house, would you please give some reasons?

3. As your family is satisfied about climatic comfort within the outdoor spaces, can you state what the significant reasons are?

Inward oriented concept (courtyard concept)	Bahammam 1996	
Compactness of buildings	Eben-Saleh 2001	
Reduction of automobile use	Al-Nowaiser 2006	
Rely on natural ventilation using cooling tower (Malgaf)	Al-Nowaiser 2006	
The ability of mud bricks on the thermal insulation	Talib 1984	
Inward oriented concept (courtyard concept)	Bahammam 1996	
Compactness of buildings	Eben-Saleh 2001	
Reduction of automobile use	Al-Nowaiser 2006	

B. Satisfaction with house security

As your family is satisfied about house security, can you state the significant factors?

Inward oriented concept (courtyard concept)	Bahammam 1996	
A limited number of doors and windows	Al-Hathloul 1981	
Community spirit	Newman 1972	
Spatial fabric (narrow and winding alleys)	Mubarak 2007	
The majority of neighbours are relatives	Al-Nowaiser 2010	
Neighbourhood surveillance by residents	Stollard 1991	
Street vitality (street activities)	Al-Nowaiser 2006	

C. Satisfaction about external appearance

As the external appearance of your house is important for your family, is that already satisfied in your house?

If not satisfied, what are the factors most affected?

Yes	No	
Limited alternatives of building materials	Eben-Saleh 2001	
Feeble building materials	Mubarak 2004	

D. General Information about informant

1. Why did you choose to live in a courtyard house – not a villa house?

2. If you could afford a villa house, would you remain in your current house or move?

Sense of community	Al-Nowaiser 2001	
More private	Al-Hemaidi 2001	
Safe and secured	Eben-Saleh 2001	
Low-cost dwelling	Mubarak 2004	
I will	I won't	

Before we end this interview, would you like to raise any points that you think still need to be covered and have not been covered so far?

I would like to thank you for accepting to participate and provide such valuable information….

Appendix C
Interview Schedule, Villa House

Interview Form
Villa House/Satisfied with alterations

Study Title **Design of the Contemporary Saudi-Arabian House**

Date ……

Time ……

District ……

Interviewee (Optional)……

Note: this interview will be conducted with the head of the household as a representative of family members.

A. With regard to climatic comfort

4. Is your family satisfaction about climatic comfort inside the house because of the alterations you made? If yes, please give some details about the most significant?

   If no, would you please give some reasons?

Yes	No	
Increasing or changing air-conditioning efficiency	Al-Ibrahim 1990	
Adding any kind of curtains to windows- inside or outside	Al-Nowaiser 2010	
Covering the yard partially or completely	Bahammam 1996	

5. Is your family satisfaction about climatic comfort within the outdoor spaces because of the alterations you made? If yes, please give some details about the most significant?

   If no, can you clarify what are the reasons?

Yes	No	
Increasing or changing air-conditioning efficiency	Al-Ibrahim 1990	
Covering the yard partially or completely	Bahammam 1996	

B. Satisfaction about family safety

Is your family satisfaction about their safety governed by the alterations you made?

If yes, would you please declare what factors most helped?

If no, what are the significant reasons?

Yes	No	
Using steel doors and grilled iron windows	Bahammam 2000	
Covering the whole yard using grilled iron	Al-Nowaiser 2010	
Raised boundary walls using screens	Eben-Saleh 2001	
Blocking off windows and balconies	Al-Nowaiser 1996	

C. Satisfaction with house security

Is your family satisfaction about house security caused by the alterations you made?

If yes, give some details?

If no, what are the significant factors?

Yes	No	
Using steel doors and grilled iron windows	Bahammam 2000	
Covering the whole yard using grilled iron	Al-Nowaiser 2010	
Raised boundary walls using screens	Eben-Saleh 2001	
Blocking off windows and balconies	Al-Nowaiser 1996	

D. Satisfaction with privacy, indoor and outdoor

1. Since your family is satisfied about privacy inside the house. Is that satisfaction because of the alterations you made? If yes, can you give some details?

   If no, can you walk me through the most reasons?

2. Similarly, your family is satisfied about privacy of outdoor spaces. If yes, would you please give some reasons?

   If no, can you walk me through the main reasons?

3. Did you feel private because of the alterations made by neighbours? If yes, give some details.

Yes	No	
Blocking off windows and balconies	Al-Nowaiser 1996	
Raised boundary walls using a hedge or screen	Abu-Ghazzeh 1996	
Shut the windows and curtains constantly	Al-Nowaiser 2010	

Yes	No	
Raised boundary walls using a hedge or screen	Abu-Ghazzeh 1996	

Yes	No	
Blocking off windows and balconies	Al-Nowaiser 1996	

E. General Information

Why did you choose to live in a villa house – not a courtyard house?

Desire for status - having large dwelling	Bahammam 1996	
Adapting 20th century technology and furnishing	Eben-Saleh 1998	
Available in property market any time	Mubarak 2004	
Solid structure	Mubarak 2004	

Before we end this interview, would you like to raise any points that you think still need to be covered and have not been covered so far?

I would like to thank you for accepting to participate and provide such valuable information….

Interview Form
Villa House/Satisfied without alterations

Study Title **Design of the Contemporary Saudi-Arabian House**

Date ……

Time ……

District ……

Interviewee (Optional) ……

Note: the interview will be conducted with the head of the household as a representative of family members.

A. With regard to climatic comfort

1. As your family is satisfied about climatic comfort inside the house. Would you please give some reasons?

2. As your family is satisfied about climatic comfort within the outdoor spaces. Can you state what the reasons are?

Openings are oriented opposite to sun directions	Bahammam 1996	
Relying extensively on electric air-conditioning	Al-Ibrahim 1990	
Using efficient materials for thermal insulation	Eben-Saleh 2001	
Covering the yard partially or completely	Bahammam 1996	

B. Satisfaction about family safety

1. As your family is satisfied about their safety, would you please declare what factors most helped?

2. Does your family feel safe because of some alterations made by neighbours? If yes, please give some details.

Low density community	Al-Hammad 2005	
High income household (house vitality: having driver and house maids)	Al-Nowaiser 2010	
Gated neighbourhoods	Bahammam 2000	
Limited access (one or two entrances)	Al-Nowaiser 2010	
The majority of neighbours are relatives	Al-Nowaiser 2010	
Increase social cohesion	Bahammam 2000	
Yes	No	
Raised boundary walls using screens	Eben-Saleh 2001	
Low density community	Al-Hammad	
	2005	
High income household	Al-Nowaiser	
(house vitality: having driver and house maids)	2010	

C. Satisfaction with house security

1. As your family is satisfied about house security. Can you state the significant reasons?

2. Is your house secure because of some alterations made by neighbours? If yes, please give some details.

Gated neighbourhoods	Bahammam 2000	
A limited number of doors and windows	Al-Nowaiser 2010	
Community spirit	Newman 1972	
Neighbourhood surveillance by residents	Stollard 1991	
Increase social cohesion	Bahammam 2000	
Yes	No	
Raised boundary walls using screens	Eben-Saleh 2001	

D. Satisfaction with privacy, indoor and outdoor

4. As your family is satisfied about privacy inside the house, can you say something about the important reasons?

5. Similarly, your family is satisfied about privacy of outdoor spaces. What are the main reasons?

6. Do you feel privacy perhaps because of some alterations made by neighbours? If yes, what are those alterations?

Big distance between windows (as a result of the large size of plot)	Al-Nowaiser 2010	
Privacy been considered within the functional design of spaces	Eben-Saleh 2001	
The majority of neighbours are relatives	Al-Nowaiser 2010	
Big distance between windows (as a result of the large size of plot)	Al-Nowaiser 2010	
Privacy been considered within the functional design of spaces	Eben-Saleh 2001	
The majority of neighbours are relatives	Al-Nowaiser 2010	
Yes	No	
Raised boundary walls using screens	Eben-Saleh 2001	
Desire for status - having large dwelling	Bahammam 1996	
Blocking off windows and balconies	Al-Nowaiser 1996	
Adapting 20th century technology and furnishing	Al-Naim 1996	
Available in property market any time	Mubarak 2004	
Solid structure	Al-Ibrahim 1990	

E. General Information

Why did you choose to live in a villa house – not a courtyard house?

Before we end this interview, would you like to raise any points that you think still need to be covered and have not been covered so far?

I would like to thank you for accepting to participate and provide such valuable information….

Appendix D

Place Interview Schedule – Courtyard & Villa Houses

Place – Interview Schedule
Courtyard House

Date:
District:

	General questions	أسئلة عامة
Attachment	**1.** How long have you lived in this house? >_ 2 y ☐ 3-7 y ☐ 8-17 y ☐ >_ 18 y ☐	1- منذ متى وانت تعيش في هذا البيت؟ سنتين او اقل ، 3-7 ، 8-17 ، 18
	2. Do you own this house? Yes No	2- هل هذا البيت ملك لك؟ نعم لا
	Detailed questions	الأسئلة التفصيلية
House	**1.** In general, are you happy about this house or you wanted to move? If you wanted to move, what are the primary reasons? **2.** Are there places within your house that you would miss if you moved? If yes, what are they, and what is it about? **3.** Does your house work in terms of ease and comfort? **4.** Does your house work in terms of day to day activities? **5.** Does this house satisfy your current and future needs? **6.** Is your family cohesion is achieved within the spaces of your house? Would you please give some details?	1- بشكل عام ، هل انت راض عن هذا البيت ، أم عندك الرغبة في الانتقال منه؟ اذا لديك الرغبة، ما هي اهم الأسباب؟ 2- هل هناك أماكن داخل منزلك سوف تفتقدها لو انتقلت منه؟ ما هي ، ولماذا ؟ 3- هل البيت قادر على توفير الراحة والاطمئنان؟ نعم لا 4- هل هو مناسب لمزاولة الأنشطة اليومية ؟ نعم لا 5- هل البيت مستوفي لاحتياجاتك الحالية والمستقبلية ؟ نعم لا 6- هل البيت قادر على تحقيق ترابط العائلة؟ نعم لا
Neighbour-hood	**1.** Are you happy about this house or you wanted to move? If you wanted to move, what are the primary reasons? **2.** Are there places where you usually meet people in your neighbourhood? **3.** Are there social qualities about your neighbourhood that you like, such as regular visiting or meeting with your neighbours? **4.** Are there places within your neighbourhood that you would miss if you moved? If yes, what are they, and what is it about? **5.** Do you walk around the neighbourhood? If no, why not? **6.** Do you feel a part of this neighbourhood? And why?	1 - بشكل عام ، هل انت راض عن هذا الحي ، أم عندك الرغبة في الانتقال منه، وما هي الأسباب؟ راضي غير راضي 2 - هل هناك أماكن في الحي تعتقد انك سوف تفتقدها لو انتقلت منه؟ نعم لا 3 - هل هناك أماكن ضمن الحي تلتقي فيها ببعض السكان؟ نعم لا 4 - هل هناك مظاهر للارتباط الاجتماعي في الحي، مثل زيارات او لقاءات دورية بين السكان او بعضهم؟ نعم لا 5 - هل من المعتاد انك تتجول في انحاء الحي ؟ نعم لا نادر 6 - هل لديك الشعور بأنك جزء من هذا الحي، ولماذا؟ نعم لا

Identity House	1. Does this house – externally – describe yourself, and why? 2. Does this house – internally – describe yourself, and why? 3. To what extent does this house form part of your identity? 4. Do you perceive your house is different than the other one across the road? If yes, would you please give some details? 5. Does your house enable you to express your cultural values?	1 - هل بيتك – من الخارج – يعبر عن ذاتك، ولماذا؟ ☐ نعم ☐ لا 2 - هل بيتك – من الداخل – يعبر عن ذاتك، ولماذا؟ ☐ نعم ☐ لا 3 - الى أي مدى تعتقد ان هذا البيت يشكل جزء من هويتك؟ 4 - هل ترى ان بيتك مختلف عن البيوت الأخرى المجاورة له؟ هل ممكن اعطاء بعض التفاصيل؟ ☐ نعم ☐ لا 5 - هل بيتك يمكنك من ابراز قيمك الثقافية؟ ولماذا؟ ☐ نعم ☐ لا
Neighbour-hood	1. What made you choose to move to this neighbourhood? 2. Do you think there is anything about your neighbourhood that makes it unique, if yes, give some details? 3. To what extent does this neighbourhood form part of your identity?	1 - ما هو سبب انتقالك الى هذا الحي بالذات؟ 2 - هل تعتقد بان هناك ما يميز هذا الحي عن غيره، آمل التفصيل في الاجابه؟ 3- الى أي مدى تعتقد ان هذا الحي يشكل جزءا من هويتك؟
Symbolism House	1. What does your house mean to you? 2. What sort of meanings do you have for the different spaces in your house? 3. Would you mind sharing with me some of memories about your experience in this house?	1 - ماذا يعني لك بيتك ؟ 2 - ما هي المعاني التي تكونت لديك عن فراغات البيت المختلفة؟ 3- هل تمانع في ان اشاركك بعض الذكريات حول تجاربك المختلفة في هذا البيت؟
Neighbour-hood	1. What does your neighbourhood mean to you? 2. Would you mind sharing with me some of memories about your experience in this neighbourhood?	1 - ماذا يعني لك هذا الحي ؟ 2 - هل تمانع في ان اشاركك بعض الذكريات حول تجاربك المختلفة في هذا الحي؟
Location House	If your house was moved to another location within this neighbourhood, would it change your feelings and emotions?	في حال انتقال بيتك الى موقع آخر ضمن هذا الحي، هل سوف يغير ذلك من مشاعرك واحاسيسك؟ ارجو التفصيل؟
Neighbour-hood	If your house was moved to another neighbourhood, would it change your feelings and emotions?	في حال انتقال بيتك الى حي سكني آخر، هل سوف يغير ذلك من مشاعرك وأحاسيسك؟ أرجو التفصيل؟
Environment House	How do you feel about the relationship between the inside and outside of your house?	ما هو انطباعك عن العلاقة بين الفراغ الداخلي لمنزلك والفراغ الخارجي (البيئة الخارجية) ؟
Neighbour-hood	How do you feel about the relationship between the inside and outside of this neighbourhood?	ما هو انطباعك عن العلاقة بين الأماكن العامة (الفراغات المفتوحة) في هذا الحي وبين طبيعة البيئة المحلية ؟

Place – Interview Schedule | Date:
Villa House | District:

Attachment

General questions

3. How long have you lived in this house?

>_ 2 y ☐ 3-7 y ☐ 8-17 y ☐ >_ 18 y ☐

4. Do you own this house?

Yes No

أسئلة عامة

1- منذ متى وانت تعيش في هذا البيت؟

سنتين او اقل ، 3-7 ، 8-17 ، 18

2- هل هذا البيت ملك لك؟

نعم لا

الأسئلة التفصيلية

Detailed questions

House

7. In general, are you happy about this house or you wanted to move? If you wanted to move, what are the primary reasons?
8. Are there places within your house that you would miss if you moved? If yes, what are they, and what is it about?
9. Does your house work in terms of ease and comfort?
10. Does your house work in terms of day to day activities?
11. Does this house satisfy your current and future needs?
12. Is your family cohesion is achieved within the spaces of your house? Would you please give some details?

1- بشكل عام ، هل انت راض عن هذا البيت ، أم عندك الرغبة في الانتقال منه؟
اذا لديك الرغبة، ما هي اهم الأسباب؟

2- هل هناك أماكن داخل منزلك سوف تفتقدها لو انتقلت منه؟ ما هي ، ولماذا ؟

3- هل البيت قادر على توفير الراحة والاطمئنان؟

نعم لا

4- هل هو مناسب لمزاولة الأنشطة اليومية ؟

نعم لا

5- هل البيت مستوفي لاحتياجاتك الحالية والمستقبلية ؟

نعم لا

6- هل البيت قادر على تحقيق ترابط العائلة؟

نعم لا

Neighbour-hood

7. Are you happy about this house or you wanted to move? If you wanted to move, what are the primary reasons?
8. Are there places where you usually meet people in your neighbourhood?
9. Are there social qualities about your neighbourhood that you like, such as regular visiting or meeting with your neighbours?
10. Are there places within your neighbourhood that you would miss if you moved? If yes, what are they, and what is it about?
11. Do you walk around the neighbourhood? If no, why not?
12. Do you feel a part of this neighbourhood? And why?

1 - بشكل عام ، هل انت راض عن هذا الحي ، أم عندك الرغبة في الانتقال منه، وما هي الأسباب؟

راضٍ غير راضٍ

2 - هل هناك أماكن في الحي تعتقد انك سوف تفتقدها لو انتقلت منه؟

نعم لا

3 - هل هناك أماكن ضمن الحي تلتقي فيها ببعض السكان؟

نعم لا

4 - هل هناك مظاهر للارتباط الاجتماعي في الحي، مثل زيارات او لقاءات دورية بين السكان او بعضهم؟

نعم لا

5 - هل من المعتاد انك تتجول في انحاء الحي ؟

نعم لا نادرا

6 - هل لديك الشعور بأنك جزء من هذا الحي، ولماذا؟

نعم لا

Identity House	**6.** Does this house – externally – describe yourself, and why? **7.** Does this house – internally – describe yourself, and why? **8.** To what extent does this house form part of your identity? **9.** Do you perceive your house is different than the other one across the road? If yes, would you please give some details? **10.** Does your house enable you to express your cultural values?	1 - هل بيتك – من الخارج – يعبر عن ذاتك، ولماذا؟ ☐ نعم ☐ لا 2 - هل بيتك – من الداخل – يعبر عن ذاتك، ولماذا؟ ☐ نعم ☐ لا 3 - الى أي مدى تعتقد ان هذا البيت يشكل جزء من هويتك؟ 4 - هل ترى ان بيتك مختلف عن البيوت الأخرى المجاورة له؟ هل ممكن اعطاء بعض التفاصيل؟ ☐ نعم ☐ لا 5 - هل بيتك يمكنك من ابراز قيمك الثقافية؟ ولماذا؟ ☐ نعم ☐ لا
Neighbour-hood	**4.** What made you choose to move to this neighbourhood? **5.** Do you think there is anything about your neighbourhood that makes it unique, if yes, give some details? **6.** To what extent does this neighbourhood form part of your identity?	1 - ما هو سبب انتقالك الى هذا الحي بالذات؟ 2 - هل تعتقد بان هناك ما يميز هذا الحي عن غيره، آمل التفصيل في الاجابه؟ 3- الى أي مدى تعتقد ان هذا الحي يشكل جزءا من هويتك؟
Symbolism House	**4.** What does your house mean to you? **5.** What sort of meanings do you have for the different spaces in your house? **6.** Would you mind sharing with me some of memories about your experience in this house?	1 - ماذا يعني لك بيتك ؟ 2 - ما هي المعاني التي تكونت لديك عن فراغات البيت المختلفة؟ 3- هل تمانع في ان اشاركك بعض الذكريات حول تجاربك المختلفة في هذا البيت؟
Neighbour-hood	**3.** What does your neighbourhood mean to you? **4.** Would you mind sharing with me some of memories about your experience in this neighbourhood?	1 - ماذا يعني لك هذا الحي ؟ 2 - هل تمانع في ان اشاركك بعض الذكريات حول تجاربك المختلفة في هذا الحي؟
Location House	If your house was moved to another location within this neighbourhood, would it change your feelings and emotions?	في حال انتقال بيتك الى موقع آخر ضمن هذا الحي، هل سوف يغير ذلك من مشاعرك واحاسيسك؟ ارجو التفصيل؟
Neighbour-hood	If your house was moved to another neighbourhood, would it change your feelings and emotions?	في حال انتقال بيتك الى حي سكني آخر، هل سوف يغير ذلك من مشاعرك وأحاسيسك؟ أرجو التفصيل؟
Environment House	How do you feel about the relationship between the inside and outside of your house?	ما هو انطباعك عن العلاقة بين الفراغ الداخلي لمنزلك والفراغ الخارجي (البيئة الخارجية) ؟
Neighbour-hood	How do you feel about the relationship between the inside and outside of this neighbourhood?	ما هو انطباعك عن العلاقة بين الأماكن العامة (الفراغات المفتوحة) في هذا الحي وبين طبيعة البيئة المحلية ؟

References

Abdelaal, A. (1998) 'Urban growth regulations of Albaha city, Saudi Arabia', *Journal of the faculty of arts*, pp. 1-28, *Manofieh University, Egypt* [Online]. Available at: www.fayoum.edu.eg/Arts/Geography/pdf/11.pdf (Accessed: 8 April 2011).

Abboud, G. (2006) Albait Alarabi tho alfina'a fi alasr Albizanti janob Syria (Courtyard Arabic house in Byzantine era in South Syria). Journal of Damascus University for Engineering Sciences, 22(1), pp. 313-338. (in Arabic).

Abu Dawud al-Sijistani (1984) *Sunan Abu Dawud*, Translated by Ahmad Hasan, (Hadith no. 3073). Lahore: Ashraf Press.

Abu-Ghazzeh, T. (1994) 'Built form and religion: underlying structures of Jeddah al-qademah', *Traditional dwellings and Settlements Review,* 5(2), pp.49-55, *TDSR* [Online]. Available at: http://iaste.berkeley.edu/tdsr5_2.htm (Accessed: 9 April 2011).

Abu-Ghazzeh, T. (1995) ' Privacy as the basic of architectural planning in the Islamic culture of Saudi Arabia'. *Arch. & Comport. / Arch. & Behav.*, 11(3-4), pp. 269-288.

Agnew, J. (1987) *Place and politics: the geographical mediation of state and society*. United States of America: Allen and Unwin.

Aina, O. O. (2014) Application of motivation theories in the construction industry. *IOSR Journal of Business and Management (IOSR-JBM)*. 16(7), pp. 01-06.

Akbar, J. (2008) *Crisis in the built environment: The case of Muslim city*. Singapore: Concept Media Pte Ltd.

Akpinar, A. (1992) 'Towards a quality appraisal of modern housing in Saudi Arabia'. *Ekistics Journal*, No. (354-355), pp.189-194.

Al-Bukhari, M. (1986) Sahih al-Bukhari . Eng trans. Muhammad Muhsin Khan, Lahore: Kazi publications, Vol.5, hadith no, 252. 22.

Al-But'hie, I. (1996) *The role of citizens in defining the meaning and quality of traditional and modern built environments: An exploratory study of Al-Riyadh, Saudi Arabia*, Unpublished PhD. thesis. Austin, University of Texas.

Alderfer, C. P. (1972) *Existence, Relatedness, and Growth: Human Needs in Organizational Settings*. New York: Free Press.

Al-Dossry, T. (2012) *Consumer culture in Saudi Arabia: A qualitative study among heads of household*. Unpublished PhD thesis. University of Exeter.

Al-Kattani, M. (1927) *Nidham alhokomh alnabawih*. Lebanon: Dar Al-Arqam Co. (in Arabic)

Al-Hagla, K. S. (2005) Cultural sustainability: An asset of cultural tourism industry. International Centre for Research on the Economics, University of Torino.

Al-Hamzani, M. (2008) 'Engineer Al-Barrak: Rising temperatures in recent years has increased the pressure on electricity plans', *Alsarq Al-Awsat*, 12 May [Online]. Available at: http://classic.aawsat.com/details.asp?section=43&article=470340&issueno=10758#.VKVStNKsWSo (Accessed: 01 January 2015).

Al-Harthy, F., Al-Enad, A., Al-Hajji, A., azizalrahman, H., Al-Moaiql, K., Al-khoraief, R., Al-Hosainy, S., Al-Slaia, A., Al-Zahrani, A., Makki, M., Al-Gabbani, M. and Al-Gahtani, M. (1999) *Brides of the desert: the story of urban development in The Kingdom of Saudi Arabia.* Riyadh: ASBAR.

Al-Hathloul, S. (1981) *The Arab-Muslim city: traditional, continuity and change in the physical environment*. PhD thesis. Massachusetts Institute of Technology**,** United States [Online] Available at: http://faculty.ksu.edu.sa/alhathloul/default.aspx (Accessed: 18 March 2011).

Al-Hathloul, S. and Mughal, M. A. (1999) 'Creating identity in new communities: Case studies from Saudi Arabia'. *Landscape and Urban Planning*, 44, pp. 199-218.

Al-Hussayen, M. (1995) 'Significant characteristics and design considerations of the courtyard house'. *Journal of Architecture and Planning Research*, 12(2), pp. 91-103.

Al-Hemaidi, W. (2001) 'The metamorphosis of the urban fabric in an Arab-Muslim city: Riyadh, Saudi Arabia'. *Journal of Housing and Built Environment*, 16, pp. 179-201.

Al-Ibrahim, M. (1990) 'The criticism of modern architecture in Saudi Arabia'. *Journal of king Saud University, Architecture and Planning*, 2(1), pp. 63-78. [Online]. Available at: http://digital.library.ksu.edu.sa/paper117.html (Accessed: 10 March 2011).

Ali, S. (2007) 'Environmental impact on the planning and architecture of the Islamic cities'. *Al-Azhar University Engineering Journal*, 2(8), pp. 432-446.

Al-Mu'tasim, M. (1980) 'Almadinh alislamih wa khasaisha' (Islamic City and its characteristics). *Bulletin of*

the Faculty of Humanities and Social Sciences, 2, pp. 217-254. [Online] Available at: http://qspace.qu.edu.qa/handle/10576/8898?show=full (Accessed: 10 June 2012). (in Arabic)

Al-Naim, M. (2006) *The home environment in Saudi Arabia and Gulf States: Growth of identity crises and origin of Identity*. (Vol. 1), Milano: I.S.U. Universita Cattolica – Largo Gemelli.

Al-Naim, M. (2008) 'Identity in transitional context: Open-ended local architecture in Saudi Arabia. *International Journal of Architecture*. 2(2), pp. 125-146.

Al-Naser, B. (2009) 'From increasing dust storms to the sharp rise in temperature: Climate disorder in Saudi Arabia as a result of the phenomenon of "global warming" or natural change? *Alriyadh*, 22 July [Online]. Available at: http://www.alriyadh.com/446770 (Accessed: 01 January 2015).

Al-Nisabory, M. (1998) *Almustadrak a'la alsahihain*. Place of publication unknown: Dar Alma'rifah (in Arabic)

Al-Nowiser, M. (1985) 'Traditional and modern settlements in Saudi Arabia'. *Habitat Intl*, 9(1), pp 5-17.

Al-Nowiser, M. (1996) 'Toward a residential zoning regulation approach for Saudi Arabia'. *Journal of Architectural and Planning Research*. 13(2), pp. 91-106.

Al-Nowiser, M. (2006) 'Sustainable residential development in Saudi Arabia', *International conference on sustainable housing (ICSH)*. King Saud University (no date), Riyadh, Saudi Arabia (no page numbers).

Al-Nowiser, M. (2010) Alinsan wa alomran (*Human and urban: application study on Riyadh*). Riyadh: King Saud University Press. (in Arabic)

Al-Qurtubi, M. (1272) *Tafsir al-jami' li ahkam al-Qur'an*. [On line] Available at: http://www.altafsir.com (Accessed: 22 March 2012).

Al-Said, F. (2003) ' The Pattern of Structural Transformation of The Saudi Contemporary Neighbourhood: The Case of Al-Malaz, Riyadh, Saudi Arabia'. *39th ISoCaRP Congress*. Cairo.

Al-Saleh, N.(2008) *Effects and geographic patterns of the traditional architecture of Saudi Arabia*. Saudi Arabia: Umm al-Qura University Press. (in Arabic)

Al-Sayed, W. (2011) 'Courtyard phenomenon in Arab's traditional architecture'. Retrieved 9 April 2011, Available at: http://lonaard.com/ar/articlearch-1.html (Accessed: 10 April 2011).

Al-Sharrakh, F. (2005) 'Diversity in desert nature brings people for camping', *Alriyadh*, [Online]. Available at: http://www.alriyadh.com/97636 (Accessed: 23 August 2015).

Altman, I., & Low, S. M. (1992) *Place attachment: a conceptual inquiry*. New York: Plenum Press.

Altman, I. and Gauvain, M. (1981) A Cross-Cultural and Dialectic Analysis of Homes'. In Liben et al. (eds.), *Spatial Representation and Behavior A Cross the Life Span: Theory and Application*, Academic Press, New York, USA, pp. 283-320.

Altman, I. and Rogoff, B. (1987) 'World views in psychology: trait, interactional, organismic, and transactional perspectives', in Stokols, D. and Altman, I. (eds.), *Handbook of Environmental Psychology*. New York: Wiley, pp. 7-40.

Anderson, S., Chen, S. and Carter, C. (2000) 'Fundamental human needs: Making social cognition relevant'. *Psychological Inquiry*, 11(4), pp. 269-318.

Azab, K. (1997) *Planning and architecture of the Islamic Cities*. Qatar: The Ministry of Awqaf and Islamic Affairs.

Bachelard, G. (1994) *The Poetics of Space: The classic look at how we experience intimate places*. Boston, Massachusetts: Beacon Press.

Bada, Y. (2006) 'New design thinking for contemporary courtyard housing', in Edwards, et al. (eds.) *Courtyard housing: Past, present and future*. New York and Oxon: Taylor and Francis, pp. 291-321.

Badawi, E. (Non) Egyptian house in the Greek era. [On line] Available at: www.archnet.com (Accessed 17 April 2012).

Bahammam, A. (1992) *An Exploration of the Residents' Modification: Private-Sector Low-Rise Contemporary Housing in Riyadh, Saudi Arabia*, Unpublished Ph.D. Theses. Michigan, University of Michigan.

Bahammam, A. (1998) 'Factors which influence the size of the contemporary dwelling: Riyadh, Saudi Arabia', *Habitat International* 22(4), pp. 557-570.

Bahammam, A. (2000) 'Applying urban design to prevent crime in residential areas: A case study of the contemporary neighbourhood in Riyadh'. *Umm Al-Qura University Journal*, 12(2), pp. 84-110.

Bahammam, A. (2011) 'Housing models compatible with the Saudi population variables: A Case Study of Riyadh city'. *Journal of King Saud University*, 23(2), pp. 161-184. (in Arabic)

Barely, M.W. (1963) *The house and home*. London: VISTA Books, Longacre Press.

Becker, G. (2003). 'Meaning of place and displacement in three groups of older immigrants'. *Journal of Aging Studies*, 17, pp. 129-149.

Berelson, B. and Steiner G.H. (1964) *Human Behaviour: An Inventory of Scientific findings*. New York: Harcourt Brace Javanorvich.

Bernarad, Y., Bonnes, M., and Giuliani, V. (1993) 'The Interior Use of Home: Behavior Principles Across and within European Culture', In E.G. Arias *The Meaning and Use of Housing*, Aldershot: Avebury, pp. 81-101.

Bernard, H. R. and Ryan, G. W. (2010) *Analyzing Qualitative data: Systematic approaches*. London; California: SAGE Publications.

Blaxter, L., Hughes, C. and Tight, M. (2006). *How to research*. (3rd edn), England: Open University Press.

Blunt, A. and Dowling R. (2006) *Home*. London/New York: Routledge.

Bok, S. (1982). *Secrets: On the ethics of concealment and revelation*. New York: Pantheon Books.

Bott, S., Cantrill, J. G., Myers Jr., O. E., (2003) Place and the promise of conservation psychology. *Human Ecology Review,* 10 (2), 100-112.

Breckon, B. and Parker, J. (1991) *Tracing the history of houses*. Newbury: Countryside Books.

Brook, I. (2000) Can spirit of place be a guide to ethical building. In Fox, W. *Ethics and the Built Environment: Professional ethics*. London and New York: Routledge.

Casey, E. S. (1987) *Remembering: A phenomenological study*. Bloomington: Indiana University Press.

Central Department of Statistics & Information-CDSI (2011). *Population statistics for 2010*. Available at: http://www.cdsi.gov.sa/index.php. (Accessed: 20 March 2011).

Cieraad, I. (1999) *At home: An anthropology of domestic space*. New York: Syracuse University Press.

Clayton, S. (2003) Environmental identity: conceptual and operational definition. In S. Clayton, & S. Opotow (Eds.), *Identity and the natural environment: The psychological significance of nature*. Cambridge, MA: MIT Press, pp. 45–65.

Coolen, H. (2009) 'House, home, and dwelling'. *The ENHR conference ' Changing housing markets: Integration and segmentation*, Prague, Czech Republic, June 28-July 1st. OTB Research Institute for Housing. The Netherlands: Delft University of Technology, pp. 1-12.

Corbin, J. and Strauss, A. (1998) *Basics of qualitative research*. Los Angeles, California: Sage Publications.

Costa, F. J., and Noble, A. G. (1986) 'Planning Arabic towns'. *The Geographical Review*, 76(2), pp. 160–172.

Creative Research Systems. Available at: http://www.surveysystem.com/sscalc.htm (Accessed: 2 February 2013).

Cresswell, T. (2004) *Place: A short introduction*. Oxford: Blackwell Publishing.

Creswell, J. W. (2009) *Research design: qualitative, quantitative, and mixed methods approaches*. Thousand Oaks: Sage Publications

Cristoforetti, A., Gennai, F. and Rodeschini, G. (2011) Home sweet home: The emotional construction of places. *Journal of Aging Studies*. 25, pp. 225-232.

Culture of Saudi Arabia (2015) Available at: http://www.everyculture.com/Sa-Th/Saudi-Arabia.html (Accessed: 27 September 2015).

Cultural sustainability (2015) Available at: https://www.marion.sa.gov.au/page.aspx?u=142 (Accessed: 5 August 2015).

Cunnington, P. (1988) *How old is your house?* Sherborne: Alphabooks.

Danaci, H. (2012). Architectural education and environmental aesthetics. *Social and Behavioural Sciences*. 51, pp. 878-882.

Daniel, J. (2012) *Sampling essentials: Practical guidelines for making sampling choices*. Thousand Oaks, California: SAGE Publications.

Dawson, C. (2009) *Introduction to research methods: A practical guide for anyone undertaking a research project*. (4th edn), Oxford: How to Books Ltd.

Denscombe, M. (2010) *The Good research guide: for small-scale social research projects*. (4th edn), England: Open University Press

Despres, C. (1991) 'The meaning of home: literature review and directions for future research and theoretical development'. *Journal of Architectural Research*, 8, pp. 96-155.

De Vaus, D. (1996) *Surveys in social research*. London: UCL Press.

Dovey, K. (1985) 'Homes and homelessness: Introduction', in Altman et al. (eds.), *Home environments*. Human behaviour and environment: Advances in theory and research. Vol. 8. New York: Plenum Press.

Downing, A. J. (1969) *The architecture of country houses*. New York: Dover Publications, Inc.

Doyal, L. and Gough, L. (1991) *A theory of human needs*. New York: Palgrave Macmillan.

Duncan, J. S. (1981) Housing and identity, cross cultural perspectives. New York: Holmes and Meier.

Eben-Saleh, M. (1998a) 'The integration of tradition and modernity: a search for an urban and architectural identity in Arriyadh, the capital of Saudi Arabia', *Habitat International, 22(4), pp. 571-589.*

Eben-Saleh, M. (1996) 'Islam and the built environment: vernacularism as an environmental ethic', *Arch. & Comport. / Arch. & Behav.,* 11(4), pp. 249-268.

Eben-Saleh, M. (1997) 'Privacy and communal socialization: The role of space in the security of traditional and contemporary neighbourhoods in Saudi Arabia'. *Habitat International*, 21(20, pp.167-184.

Eben-Saleh, M. (1998b) 'Actual and perceived crime in residential environments: A debatable discourse in Saudi Arabia'. *Building and Environment*, 33(4), pp. 231-244.

Eben-Saleh, M. (2001) 'The evolution of planning & urban theory from the perspective of vernacular design: MOMRA initiatives in improving Saudi Arabia neighbourhoods', *Land Use Policy,* 18, pp.179-190.

Eben-Saleh, M. (2002) 'The transformation of residential neighbourhood: the emergence of new urbanism in Saudi Arabian culture'. *Building and Environment*, 37, pp.515-529.

Eid, M. , and Youssef, W. (2000) 'The reuse of the courtyard house concept in the modern architecture' (in Arabic). [On line] Available at: www.Kau.edu.sa/show_res.aspx (Accessed on 15th April 2012).

El-Shorbagy, A. (2010) 'Traditional Islamic-Arab house: vocabulary and syntax'. *International Journal of Civil & Environmental Engineering (IJCEE-IJENS)* 10(4), pp.15-20.

Emmison, M., Smith, P. and Mayall, M. (2012). *Researching the visual*. London: SAGE Publications Ltd

Eyre, E. (2015) McClelland's human motivation theory: discovering what drives members of your team. Available at: http://www.mindtools.com/pages/article/human-motivation-theory.htm. (Accessed: 20 August 2015).

Eze, N. (1995) *Human Resource Management in Africa: Problems and solution*. Lagos: Zomax Press.

Fowler, F. j. (2009) *Survey research methods*. California; London: SAGE Publications.

Flick, U. (2009) *An introduction to qualitative research*. (4th edn). London: SAGE Publications.

Fried, C. (1970) *An anatomy of values*. Cambridge: Harvard University Press.

Garba, S. (2004) 'Managing urban growth and development in the Riyadh metropolitan area, Saudi Arabia'. *Habitat International* 28(4), pp. 593-608

Gardiner, S. (1975) *Evolution of the house.* United Kingdom: Constable and Company.

Gerson, K., Stueve, C. A. & Fischer, C. S. (1977) Attachment to place. In C. S. Fischer, R. M. Jackson, C. A. Stueve, K. Gerson, L. Jones, M. Baldassare (Eds), *Networks and places*, New York: The Free Press.

Gieryn, T. (2000)' A space for place in sociology'. *Annual Reviews Sociology*. 26, pp. 463-496.

Giuliani, M. V. (2003). Theory of attachment and place attachment. In Bonnes, M., Lee, T. and Bonaiuto, M (Eds.), *Psychological theories for environmental issues* (pp. 137-170). Aldershot: Ashgate Networks and Places. New York: The Free Press, pp. 139-161.

Goffman, E. (1959) *The presentation of self in everyday life*. New York: Doubleday, Anchor Books.

Gomes, O. (2011) 'The hierarchy of human needs and their social valuation', *International Journal of Social Economics*, 38(3), pp.237-259.

Gray, D. (2009) *Doing research in the real world*. Los Angles: SAGE.

Hales, S. (2003) *The Roman house and social identity*. United Kingdom: Cambridge University Press.

Habraken N. J. (1998) *The Structure of the Ordinary*. Cambridge, MA: MIT Press.

Hammosh, M. (2002) *Fiqh alomran Alislami.* Dubai: Dar alturath llderasat Alislamiah. (in Arabic)

Hanson, J. (1998) *Decoding homes and houses*. United Kingdom: the Press Syndicate of the University of Cambridge.

Hawkes, J. (2011) *The fourth pillar of sustainability: culture's essential role in public planning*. Australia: Common Ground.

Hidalgo, M. C. and Hernandez, B. (2001) 'Place attachment: Conceptual and empirical questions'. *Journal of Environmental Psychology*, 21, pp. 273-281.

Hillier, B. and Hanson, J. (1984) *The social logic of space*. Cambridge: Cambridge University Press.

Hummon, D. (1992) 'Community attachment', in Altman, I. & Low, S. (eds.) *Place Attachment*. London: Plenum Press.

Ibn-gaim, A. (1985) *Zad al-ma'd*. Beirut: Alresalh Establishment. (in Arabic)

Ibrahim, A. (1996a) 'Al khasais al omraniah llmadinah al-islamiah' (The urban characteristics of the Islamic city). *Alam Al-Bena'a (Journal of Building World*). [Online]. Available at: http://www.cpas-egypt.com/Articles/Baki/articles_seminar/17.html (Accessed: 4 July 2012). (in Arabic)

Ibrahim, A. (1996b) 'T'aseel *alqiam alhdariah fi benaa almadinh alislamih almoaaserh' (*Rooted cultural values in building the contemporary Islamic city). *Alam Al-Bena'a (Journal of Building World*). [Online]. Available at: http://www.cpas-egypt.com/AR/book_3_ar.htm (Accessed: 4 July 2012). (in Arabic)

Ibrahim, A. (2004) 'Altawjih al-islami llomran' (Islamic guidance for urban). *Alam Al-Bena'a (Journal of Building World*). [Online]. Available at: http://www.cpas-egypt.com/Articles/Baki/press/231.html (Accessed: 4 July 2012). (in Arabic)

Ismail, (2004) 'Al-Emarh wal omran fe dhelal Al-Qur'an' (Architecture and urban in the shades' of Qur'an). [On line]. Available at: www.arch.arab-eng.org. (Accessed: 18 March 2012). (in Arabic)

Jenkins, W. (2015) Sustainability theory. Available at: http://www.berkshirepublishing.com/assets_news/sustainability/Spirit_SustainabilityTheory.pdf. (Accessed: 4 August 2015).

Jorgensen, B. and Stedman, R. (2001) Sense of place as an attitude: Lakeshore owners attitude toward their properties. *Journal of Environmental Psychology*, 21, pp. 233-248.

Kamali, M. (2010) 'The environment in Islam: environmental care in Islam: A Qur'anic perspective'. *The 15th General Conference*. Amman, Jordan, 27-29 September. The Royal Aal al-Bayt Institute for Islamic Thought, pp. 1-31

Khalid, F. (2002) 'Islam and the environment'. *Encyclopedia of Global Environmental Change*. 5, pp. 332-339

King, G. (1998) *The traditional architecture of Saudi Arabia*. London: I.B. Tauris & Co Limited.

Kowaltowski, D. (1998) 'Aesthetics and self-built houses: An analysis of a Brazilian setting'. *Habitat International*. 22(3), pp. 299-312.

Kottak, C. P. (2010) *Cultural Anthropology: Appreciating Cultural Diversity* (14th ed.). New York: McGraw-Hill Education.

Lapan, S., Quartaroli, M. and Riemer, F. (2012) *Qualitative research: An introduction to methods and designs*. San Francisco: Jossey-Bass.

Larson, S., De Freitas, D., and Hicks, C. (2013) 'Sense of place as a determinant of people's attitudes towards the environment: Implications for natural resources management and planning in the Great Barrier Reef, Australia'. *Journal of Environmental Management,* 117 (2013) 226-234.

Laszlo, A., and Krippner, S. (1998) Systems theories: Their origins, foundations, and development. J.S. Jordan (Ed.), *Systems Theories and A Priori Aspects of Perception*, Ch. 3, pp. 47-74.

Lawrence (1982) 'Domestic space and society: A cross-cultural study, comparative studies in society and history', 24(1), pp. 104-130.

Maguire, M. (1982) *Burglary in dwelling: The offence, the offender and the victim*. London: Heineman.

Mallet, S. (2004), 'Understanding home: a critical review of the literature', *The Sociological Review,* 52(1), pp. 62-89.

Malpas, J. (1999) *Place and experience: A philosophical topography*. Cambridge: Cambridge University Press.

Marcus, C. C. (1995) *House as a mirror of self*. California: Conari Press.

Marquette, C. (1998) Cultural Ecology. Available at: http://www.indiana.edu/~wanthro/eco.htm#themes. (Accessed: 22 September 2015).

Maslow, A. (1975) *Motivation and personality.* (2nd edn.). New York: Harper and Row.

Mason, J. (2002) *Qualitative researching*. (2nd edn.). London: Sage Publications

Matthews, S. (2008) 'Privacy, separation, and control'. *The Monist*, 91(1), pp.130-150 (online).

Max-Neef, M. (1991) *Human scale development: Conception, application and further reflections*. United State of America: The Apex Press.

Mazumdar, S. and Mazumdar, S. (2004) 'The articulation of religion in domestic space: rituals in the immigrant Muslim home'. *Journal of Ritual Studies*, 18(2), pp. 74-85.

Memarian, G. and Brown, F. (2006) 'The shared characteristics of Iranian and Arab courtyard houses', in Edwards et al. (eds.) *Courtyard housing: Past, present and future*. New York and Oxon: Taylor and Francis, pp. 27-40.

Mertens, D. (1998) Research methods in education and psychology: Integrating diversity with quantitative and qualitative approaches. London: SAGE Publications.

Metz, H. (1992) *Saudi Arabia: A country study*. Portland: The Division.

Ministry of Higher Education-MOHE, Saudi Arabia (2011). *Geography of Saudi Arabia*. Available at http://www.mohe.gov.sa/ar/studyinside/aboutksa/pages/Geographical-Kingdom.aspx. (Accessed: 5 March 2011).

Montgomery, J. (1975) 'Human needs in housing', in Morrison, B. (ed.), *Human, needs in housing: An ecological Approach*. Millburn: RFP Publishing.

Moustapha, A., Costa, F. and Nobel, A. (1985) 'Urban development in Saudi Arabia: building and subdivision codes'. *Butterworth& Co Limited,* 2(2), pp. 140-148.

Mubarak, F. (2004) 'Urban growth boundary policy and residential suburbanization: Riyadh, Saudi Arabia'. *Habitat International*, 28, pp. 567-591.

Mubarak, F.A. (2007) 'Cultural adaptation to housing needs: a case study, Riyadh, Saudi Arabia'. [On line]. Available at: http://faculty.ksu.edu.sa/3177/Documents/Housing% (Accessed 4 February 2012).

Mustafa, M., Daizhizhong and Yuan Hong (2010) 'The characteristics of architecture style of the traditional house in the Mosul city – Analytical study'. *American Journal of Engineering and Applied Sciences*, 3(2), pp. 380-389.

Muthesius, S. (1982) *The English terraced house*. London: Yale University Pres.

Nawfal, I. (2011) 'Islamic values in city urban'. Modernity in the face of Islamic architecture conference. Cairo: Modern University, 25 Mars. (in Arabic)

Newman, O. (1973) *Defensible space: Crime prevention through urban design*. New York: Collier Books.

Norberg-Schulz, C. (1980) *Genius Loci: Towards a Phenomenology of Architecture*. London: Rizzoli

Norberg-Schulz, C. (1985) *The Concept of Dwelling: On the Way to Figurative Architecture*. New York: Electa/Rizzoli.

Okasha, T. (1994) *Alqiam aljamaliah fi alimarh alislamih* (aesthetics values in Islamic architecture). Egypt: Dar Al-Shoroq. (Arabic)

Oliver, P. (1987) *Dwellings: The house across the world*. Britain: University of Texas Press.

Omer, S. (2010) *Islam and housing*. Malaysia: AS Noordeen.

Oswald, F., & Wahl, H. W. (2005) 'Dimensions of the meaning of home', in Rowles, G. D. and Chaudhury, H. (eds.), *Home and Identity in Late Life: International Perspectives.* New York: Springer*,* pp. 21-45.

Ozkan, S. (2006) 'Foreword – Courtyard: a typology that symbolises a culture', in Edwards et al. (eds.) *Courtyard housing: Past, present and future*. New York and Oxon: Taylor and Francis (no page numbers).

Ozcan, Z., Gultekin, N., and Dundar, O. (1998). Sustainability versus development: Mudanya's war of survival as a liveable city. 38th Congress of the European Regional Science Association, 28 August-1 September, Vienna, Austria.

Ozgur-Zan (2015) A brief introduction to motivation theory. Available at: http://ozgurzan.com/management/management-theories/theories-about-motivation/ (Accessed: 10 September 2015).

Passi, A. (2002) 'Place and region: regional worlds and words progress in human geography'. 26(6), pp. 802-811.

Penn, C. (1954) *Houses of to-day: A practical guide*. London: Batsford.

Pickel, A. (2007) Rethinking Systems Theory: The Problem of Culture. The European Sociological Association 8th Conference, Glasgow, 3rd–6th September.

Poyner, B. (1983) *Design against crime: Beyond defensible space*. London, UK: Butterworths.

Presidency of Meteorology and Environment - PME (2011). *Climate in Saudi Arabia.* Available at: http://pme.gov.sa/weather.asp. (Accessed: 5 April 2011)

Qur'an (16: 80), (15: 82), (14: 37), (11: 61), (07: 199), (16: 90), (05: 38), (17: 33), (24: 30), (24: 27), (24: 28), (22: 26), (16: 112), (02: 30), (12: 31), (15: 51), (10: 87), (24: 61), (57: 25), (27: 44), (03:97), (28:58), (45:13), (07:74), (02:189), (17:49)

Ragette, F. (2003) *Traditional domestic architecture of the Arab region*. Sharjah: American University of Sharjah.

Rykwert, J. (1991) 'House and home', *Social Research*, 58(1), pp. 51-62.

Rowles G. and Chaudhury H. (2005) *Home and identity in late life: international perspectives*. New York: Springer.

Rapoport, A. (1969) *House form and culture*. United Kingdom: Prentice-Hall.

Rachels, J. (1975) 'Why privacy is important'. *Philosophy and Public Affairs*. 4(4), pp. 323-333.

Relph, E. (1976) *Place and Placelessness*. London: Pion.

Rollero, C. and Piccoli, N. (2010) 'Place attachment, identification and environment perception: An empirical study'. *Journal of Environmental Psychology*, 30(I.2), pp. 198-205.

Sale, K (1985*) Dwellers in the brad: The Bioregional Vision*. San Francisco: Sierra Club.

Sack, R. (1997) *Homo geographicus*. Baltimore: Johns Hopkins University Press.

Saudi Arabia – Language, Culture, Customs and Etiquette (2014) Available at: http://www.kwintessential.co.uk/resources/global-etiquette/saudi-arabia-country-profile.html. (Accessed: 28 September 2015).

Saudi Embassy (1998) 'House of hair'. Available at: http://www.saudiembassy.net/files/PDF/Publications/Magazine/1998-Winter/houses.htm (Accessed: 17 May 2012).

Scammon, D. (2012) Recognizing Cultural Sustainability. Available online at: https://specialdee.wordpress.com/2012/04/07/recognizing-cultural-sustainability/. (Accessed: 2 September 2015).

Skyttner, L. (1996) *General Systems Theory*. London: Macmillian Press.

Scannell, L. and Gifford, R. (2010) 'The relations between natural and civic place attachment and pro-environmental behaviour'. *Journal of Environmental Psychology*, 30(I.3), pp. 289-297.

Sharif, S., Zain, M. F. and Surat, M. (2010) 'Concurrence of thermal comfort of courtyard housing and privacy in the traditional Arab house in Middle East'. *Australian Journal of Basic and Applied Science*, 4(8), pp. 4029-4037.

Sixsmith, J. (1986) 'The meaning of home: an exploratory study of environmental experience'. *Journal of Environmental Psychology*, 6, pp. 281-298.

Smith, P. and Riley, A. (2009) *Cultural theory: An introduction*. (2nd ed.) USA; UK: Blackwell Publishing.

Sopher, D. E. (1967) *Geography of religious*. Englewood Cliffs, NJ: Prentice-Hall.

Soud, M., Mat, H. and Ali, K. (2010) 'The aspects of decline in contemporary Islamic cities'. *European Journal of Scientific Research*, 47(1), pp.043-063

Steward, J. (1955) *Theory of Culture Change*. Urbana: University of Illinois Press.

Storey, J. (2012) *Cultural theory and popular culture: An introduction*. (6th ed.) Edinburgh Gate: Pearson Education.

Strinati, D. (2004) *An introduction to theories of popular culture* (2nd ed.). UK and USA: Routledge.

Sudjic, D. (1999) *Home, the twentieth-century house*. London: Laurence King Publishing in association with Glasgow Festival Company Ltd.

Talib, K. (1984) *Shelter in Saudi Arabia*. New York: Martin's Press

Tuan, Y. F. (1974) *Topophilia: A study of environmental perception, attitudes and values*. Englewood Cliffs, NJ: Prentice-Hall.

Turkustani, A. (2008) 'Architectural features of traditional houses in the Kingdom of Saudi Arabia'. Available at: http://www.bab.com/persons/111/show_particle.cfm?article_id=497 (Accessed: 1 March 2011).

Twigg, J. (2006). *The body in health and social care*. Basingstoke: Palgrave Macmillan.

Ujam, F. (2006) ' The cosmological genesis of the courtyard house', in Edwards, B., Sibley, M., Hakim. M. and Land, P. (ed.) *Courtyard housing: Past, present and future*. New York and Abingdon: Taylor and Francis, pp. 127-157.

Uzunoglu, S. S. (2012) 'Aesthetics and architectural education'. *Social and Behavioural Sciences*. 51, pp. 90-98.

Werbach, A. (2012) The Living Principles for Design. Available at: http://www.core77.com/blog/business/the_living_principles_for_design_a_new_online_community_for_sustainable_design_16800.asp. (Accessed: 8 August 2015).

Werner, C., Altman, I., and Oxley, D. (1988) 'Temporal aspects of homes: a transactional perspective'. *Psicologia*, 1, pp. 413-430.

Wright, F. (1953) *The future of architecture*. New York: Horizon Press.

Wright, W. (1975) *Sixguns and society: A structural study of the western*. Berkeley: University of California Press.

Watson, G. B., and Bentley, I. (2007) *Identity by design*. Oxford: Elsevier Limited.

Waller, I. (1979) 'What reduces residential burglary: Action and research in Seattle and Toronto', in Schneider, H. J. (ed.), *The victim in international perspective: Papers and essays given at third international symposium on Victomology.* Berlin; New York: De Gruyter, pp. 479-492.

Wight, F. H. (1953) 'Manners and customs of Bible lands: Tent dwellings'. Available at: http://www.baptistbiblebelievers.com/LinkClick.aspx?fileticket=eAUOc1S1VKU%3D&tabid=232&mid=762 (Accessed: 20 March 2013)

Willis, K. (2006) 'Interviewing', in Desai, V. and Potter, R. (eds.), *Doing development research*. London: Sage Publications, pp 145-152

Woodforde, J. (1969) *The truth about cottages: A history and an illustrated guide to 50 types of English cottage*. London: Routledge & Kegan Paul.

Yamani, M. (2011) 'Components of Makkah's house'. Available at: http://makkawi.com/showthread.php?t=83590 (Accessed: 22 March 2011).

Yorke, F. R. S. (1934) *The modern house*. London: Architectural Press.

Zhang, D. (2013) *Courtyard housing and cultural sustainability: Theory, practice, and product*. UK: Ashgate Publishing.

Zumthor, P. and Binet, H. (1998) *Peter Zumthor: Works: Buildings and Projects 1979-1997*. Baden: Lars Muller Publishers.

Figures' website sources

www.ezilon.com

www.arriyadh.com

www.jeddah.gov.sa

www.skyscrapercity.com

www.alriyadh.com

www.jazan.com

www.mekshat.com

www.yourwonder.com

www.trekearth.com

www.dreamstime.com